

STATE OF CALIFORNIA

SENATE SELECT COMMITTEE TO INVESTIGATE
PRICE MANIPULATION OF THE WHOLESALE ENERGY MARKET

OVERVIEW OF INVESTIGATIONS, STUDIES, AND
REPORTS REGARDING THE ENERGY CRISIS

STATE CAPITOL
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THURSDAY, APRIL 26, 2001

1:25 P.M.

Reported by:

Evelyn J. Mizak
Shorthand Reporter

APPEARANCES

MEMBERS PRESENT

SENATOR JOSEPH DUNN, Chair

SENATOR DEBRA BOWEN

SENATOR MARTHA ESCUTIA

SENATOR MAURICE JOHANNESSEN

SENATOR WILLIAM MORROW

MEMBERS ABSENT

SENATOR WES CHESBRO

SENATOR SHEILA KUEHL

SENATOR BYRON SHER

STAFF PRESENT

IRMA MORALES, Committee Assistant

JONATHON WOFFORD, Committee Assistant

ALEXANDRA MONTGOMERY, Committee Consultant

RONDA PASCHAL, Committee Consultant

DONNA DRIVON, Committee Technology Assistant

WADE TEASDALE, Chief of Staff to SENATOR MORROW

ALSO PRESENT

ASSEMBLY MEMBER BARBARA MATTHEWS

JUDYANNE MCGINLEY, Deputy Legislative Counsel
Office of Legislative Counsel

ERIC HILDEBRANDT, Ph.D., Manager
Market Monitoring, Department of Market Analysis
California Independent System Operator

ANJALI SHEFFRIN, Ph.D., Director
Department of Market Analysis
California Independent System Operator

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1 P-R-O-C-E-E-D-I-N-G-S

2 -- oo0oo--

3 CHAIRMAN DUNN: Good afternoon, everybody.

4 Welcome to round two of our investigation hearings with the
5 Senate Select Committee.

6 I want to do a couple real quick housekeeping
7 matters, and then also open up to any comments by any of the
8 committee members, and we'll get right to our witnesses.

9 First of all, as you can see, we've added a
10 technology person, Donna, who's over here, because there's
11 certain reports we're going to be going through today, as we did
12 last week. We wish we had had the foresight to have done this
13 last week. When we're talking about specific language, we want
14 to have everybody to have access to what we're dealing with.
15 That's the reason that we're bringing in the information
16 technology folks to be able to do that for everybody's benefit
17 as we move through some of these reports.

18 We also have Evelyn back as well. For those that
19 are interested in transcripts, getting the transcripts of our
20 hearings, we are working on trying to -- and slap me if I say
21 this incorrectly -- that we are working to make sure that they
22 are available via disk shortly after the hearings. Because as I
23 suspect those who want copies of the transcript, that would
24 probably be the easiest format, and we'll keep everybody posted
25 when that's ready to go, how and through what means you can
26 access a transcript by a disk.

27 What we're trying to avoid, everybody, and no
28 surprise to anyone, is our office, or Evelyn, or anybody having

1 to make a whole bunch of hard copies, when we can do it via
2 technology. We're trying to make that happen, and hopefully,

3 happen quickly. We'll let everybody know as soon as that is
4 worked out.

5 As far as some of the procedural issues of what's
6 been going on in the background, we are continuing to work with
7 the five generators that have received document requests.
8 There's been partial written responses, some discussions that
9 will be undertaken of trying to work out objections and
10 confidentiality objections, and also just plain burdensome
11 concerns about those from both sides, to be honest. So, that is
12 still a work in process. Again, we'll keep everybody posted
13 with respect to that.

14 We have also served document requests on at least
15 one of the pure traders. Enron received one. There are going
16 to be more in that category: Edison Market Trading, Merrill
17 Lynch Capital Services, Morgan Stanley, Semptra, Arizona Public.
18 There's a whole series of them that fall into that category that
19 will be receiving document requests as well. I don't want Enron
20 to think we're just picking on them by any stretch of the
21 imagination.

22 Same process, written document requests. We're
23 willing to work with everybody who's on the receiving end to
24 minimize the burden, resolve confidentiality concerns, et
25 cetera; something that we expect will take a little bit of time,
26 but trying to do it as cooperatively as possible.

27 As many of you are probably aware, one subpoena
28 was issued already, or is about to be issued today, but it got

1 some notoriety yesterday because it showed up in Rules Committee
2 yesterday. That's a subpoena at the ISO seeking various
3 confidential information that is available there. Of course,
4 ISO has to go through their hoops and ladders before they can
5 actually respond to that subpoena, which I'm sure, once served

6 with that subpoena, those hoops and ladders will be undertaken,
7 giving all of the interested parties an opportunity to make
8 whatever comments, objections, whatever the case may be.

9 We're also putting together the next hearing,
10 which we anticipate will be next week, most likely on Thursday.
11 Again, we will finalize that as quickly as possible.

12 An alert to everybody. We are going to plan one
13 of the hearings in the not too distant future in Southern
14 California. The longer we go, we may add additional ones in
15 Southern California to give a little fairness for folks, that
16 they aren't all here in Sacramento. But I just want to give
17 everybody a heads up to that one.

18 Also, as I know everybody in this room is well
19 aware, there was an order from FERC yesterday. This hearing is
20 not about that order. That will be in the other committee; in
21 Senator Bowen's committee that order will be addressed, some
22 significance.

23 I raise that because we have two witnesses here
24 that oftentimes their entire life is, professional life, is an
25 interplay with FERC, and there may be some temptation to ask
26 them about the FERC order, and have them provide comments. They
27 are not here for that today, not prepared to do that. So, I'd
28 ask that we hold off getting into any discussion about the FERC

1 order yesterday.

2 In addition, I think that probably touches upon
3 all the procedural issues.

4 We're going to try to make the hearings shorter.
5 Last week was our first one out of the box. It went long, as
6 everybody knew. A lot of foundational stuff that we had to
7 cover, and a lot of new terms for us, as a committee, that we
8 wanted to spent some time on understanding, but we're going to

9 try to shorten it quite a bit, both, number one reason, for the
10 witnesses themselves, but for everybody's sake, so we can get
11 right to the core information and avoid as much of the
12 irrelevant but interesting issues -- irrelevant to the subject
13 of this particular committee. So, we're going to try to do
14 that, but bear with us. We'll get better with each passing
15 hearing as we go on.

16 Our intent today is, with his great patience, is
17 to bring back Eric Hildebrandt, who will be first; then Dr.
18 Anjali Sheffrin; and I believe we've got the State Auditor here
19 as well too, who sat last week through a rather long hearing and
20 we didn't get to as well. So, our hope is to get to all three
21 of those, and that we conclude by late afternoon.

22 And yes, Evelyn, let the record reflect that we
23 will give Evelyn all the necessary breaks that we need to, since
24 we put her in an endurance test last week.

25 Before I do anything further, I open it up. If
26 any of the committee members wish to offer any opening comments
27 today, welcome any comments. Senator Morrow, Senator Bowen,
28 Senator Johannessen, Senator Escutia.

1 There is one other procedural thing. There was a
2 request by several of the members which I thought was an
3 excellent request. And that is, within a day or two of each
4 hearing, that we prepare a summary, a short summary, of the
5 testimony that was provided at that particular hearing. Not
6 only just for the committee members, but we'll make them
7 publically available as well. So, we're going to institute that
8 one, and we are in the process of summarizing the testimony from
9 last week from Dr. Wolak, or Professor Wolak, but we will be
10 doing that as well.

11 I just wanted to share a few quotes out of his

12 transcript, just to give everybody a little bit of the platform
13 of what we did last week, and where we're going to build upon
14 that this week. Because this week is what I refer to as simply
15 another foundational hearing. We're building some blocks here,
16 more for education for us than anything else, before we start
17 getting into an examination of the specific conduct of specific
18 companies on that wholesale electricity market.

19 A couple quick points that were raised by
20 Professor Wolak just as summary. He stated, as a result of the
21 exercise of market power, particularly in the summer months of
22 '98, the markets were not functioning in a manner consistent
23 with a competitive market. It pretty much is not a market, but
24 ask-and-you-shall-receive in terms of prices that you can get.

25 He also stated, despite the fact that 1999 was a
26 reasonably good year, none of the fundamental problems with the
27 market were addressed that year. And even to date, he felt no
28 steps had been taken to assure no repeat of the huge price

1 spikes.

2 He stated, "The only reasonable explanation for
3 the extraordinary 2000 prices is the exercise of market power."
4 He also stated, when applied to the largest of the generators,
5 the Big Five as they're referred to last week, when they applied
6 to FERC for market-based rates, it was his opinion that was
7 evidence that they all had market power at that time, and that
8 FERC has completely failed to enforce the Federal Power Act.

9 And one last comment, he mentioned that he has
10 done analyses of specific acts of specific generators, but
11 confidentiality agreements prevent him at this point from
12 disclosing his analyses.

13 Obviously, there was much more in the many hours
14 of testimony, but those are some of the highlights about market

15 power, at least in his particular opinion.

16 So, let us build upon that.

17 Senator Bowen.

18 SENATOR BOWEN: Thank you.

19 I think it's important for me, as we begin these
20 hearings, to lay out what I think the dual purposes are of
21 what we're doing.

22 The first, obviously, is to investigate the
23 actual the conduct of various market participants and trading
24 companies which have a role in this.

25 But the second is to understand how the market
26 works in order to be able to make policy decisions about a
27 structure that might allow us to continue to have a market, but
28 one that actually functions to benefit consumers.

1 So, one side of this is looking at actual
2 conduct, to be able to assess what happened. The other is what
3 lessons are there for structuring how we want electricity to be
4 bought, sold, and delivered in this state.

5 I think it's useful for all of us to keep in mind
6 that we have both of those tasks to do here, one looking back,
7 one looking forward.

8 CHAIRMAN DUNN: Thank you, Senator Bowen.

9 Any other comments? Seeing no other comments,
10 JudyAnne, if you would swear in. Our Leg. Counsel
11 representative from last week. If you would do your duty,
12 please.

13 MS. MCGINLEY: Thank you, Chairman. JudyAnne
14 McGinley with Legislative Counsel.

15 Will you please state your name for the record.

16 DR. HILDEBRANDT: Eric Hildebrandt.

17 MS. MCGINLEY: Please raise your right hand.

18 [Thereupon the witness,
19 ERIC HILDEBRANDT, swore to
20 tell the truth, the whole
21 truth, and nothing but the
22 truth.]

23 MS. MCGINLEY: Thank you.

24 CHAIRMAN DUNN: Eric, do you prefer Doctor,
25 Professor? I know you're going to say Eric, aren't you?

26 DR. HILDEBRANDT: Eric's fine.

27 CHAIRMAN DUNN: We'll comply with your request
28 today on that one.

1 If you would, state your full name.

2 DR. HILDEBRANDT: Eric Hildebrandt.

3 CHAIRMAN DUNN: Eric, can you give us, just in
4 brief summary, your background?

5 DR. HILDEBRANDT: I am Manager of Market
6 Monitoring in the Department of Market Analysis at the
7 California ISO. My job duties there are rather broad. They
8 involve monitoring and reporting on the markets, special
9 analysis related to both monitoring the market and market design
10 issues. And most recently, much of that has been focused on
11 market power, the exercise of market power in California's
12 market.

13 CHAIRMAN DUNN: We asked the same question of
14 Professor Wolak last week, but again, some of us need repeating.

15 Can you tell us the difference between the Market
16 Surveillance Committee and the Market Analysis Committee within
17 the ISO structure?

18 DR. HILDEBRANDT: Frank described the Market
19 Surveillance Committee, which is an independent external panel
20 of three experts who both advise the ISO, as well as can report

21 directly to FERC. And they advise the ISO Board as well as ISO
22 staff.

23 The Department of Market Analysis, my -- the
24 Department of Market Analysis, of which I belong, is the
25 internal sort of the economic analysis department within the
26 ISO. And again, really covers a variety of functions:
27 reporting on the markets, monitoring the performance, and often
28 aimed at providing input on a going-forward basis on market

1 design issues.

2 CHAIRMAN DUNN: Can you give us a little bit of
3 your background as far as education and experience?

4 DR. HILDEBRANDT: Yes. My degree, Ph. D. and
5 Masters, are in energy management and policy. It's an
6 interdisciplinary degree of economics, computer science, and
7 policy focused on the energy industry.

8 My professional focus for over the last decade
9 has been on the electric utility industry as a consultant, and
10 also working at the Sacramento Municipal Utility District in
11 research and evaluation, and finally here at the ISO in market
12 monitoring.

13 CHAIRMAN DUNN: I'm going to give you an open
14 forum for a bit, Eric, as you and I have discussed.

15 There are two specific reports that we want to
16 talk to you about today. One is dated March 2001, entitled,
17 "Further Analysis of the Exercise and Cost Impacts of Market
18 Power in California's Wholesale Energy Market."

19 And the second one is the April 9th, 2001 report
20 prepared by you, entitled, "Impacts of Market Power in
21 California's Wholesale Energy Market: More Detailed Analysis
22 Based on Individual Seller Schedules and Transactions in the ISO
23 and PX Markets."

27 marketplace, there's a significant gap which cannot be explained
28 by basic fundamental supply and demand conditions, gas prices,
1

1 emissions credits, a lot of the factors that you've heard
2 mentioned as attributing to the high prices this summer.

3 But the basic approach with this analysis is to
4 look at actual system conditions, and control for all those
5 other factors -- the gas price, and availability of hydro, et
6 cetera -- and really factor in what a price would be, taking
7 those into account, and compare that to actual system prices,
8 the difference being attributable to market power or the --
9 primarily an increase in price due to bidding above costs, above
10 levels you would expect in a competitive market by suppliers.

11 So, the first part is a system level analysis.
12 And fundamental conclusion there were that observed prices were
13 approximately 30 percent higher than one would expect in a
14 competitive market given system conditions.

15 CHAIRMAN DUNN: Yes, Senator Johannessen.

16 SENATOR JOHANNESSEN: Thank you, Mr. Chairman.

17 You're referring to the March study that you
18 made?

19 DR. HILDEBRANDT: Correct.

20 SENATOR JOHANNESSEN: The sale of power at that
21 point was 30 percent higher than we normally would have expected
22 on an open and free market?

23 DR. HILDEBRANDT: The 30 percent figure was
24 looking back over to the previous 12 months. It was kind of an
25 annualized number. So, putting the summer and fall experience
26 in a perspective of an entire year, total costs were about 30
27 percent higher than what we would have expected in a competitive
28 market.

1 SENATOR JOHANNESSEN: All right, thank you.

2 CHAIRMAN DUNN: While we've interrupted, Eric,
3 quick question for you.

4 We had Frank do the same thing, and I'm going to
5 ask Anjali when she comes to testify.

6 How do you define the phrase, market power?

7 DR. HILDEBRANDT: Well, on an individual supplier
8 basis, it's a supplier acting not as a price taker, but rather
9 bidding or offering supply at a price higher than its marginal
10 cost in an effort to raise the market price, and thereby profit.

11 CHAIRMAN DUNN: Senator Escutia.

12 SENATOR ESCUTIA: Dr. Hildebrandt, you indicated
13 that after you'd taken into account all these factors, you know,
14 all these costs, whether it's supply and demand, gas, you
15 recited a whole host, and you identified the difference due to
16 market power, which is about 30 percent higher than one would
17 expect in a competitive market, have you been able to segregate
18 that figure and to further refine it, to see how that 30 percent
19 plays out, whether it's a Stage One alert, a Stage Two alert, a
20 Stage Three alert, a meltdown.

21 Are there price differentials depending on the
22 type of alert we're on?

23 DR. HILDEBRANDT: We did -- Table 2-3 of the
24 report does precisely that. It took the results for the last
25 year, and disaggregated them into Stage One through Three alerts
26 and no alert.

27 We did that because the comments we were
28 responding to at the time, the FERC proposal, proposed to

1 mitigate prices only during Stage Three alerts, and --

2 SENATOR ESCUTIA: So, what's the price
3 differential that might be, perhaps, that's higher than one

4 would expect in the competitive market, segregated by stages?

5 DR. HILDEBRANDT: Well, reading from the table,
6 during staged alerts, say a Stage Two or Three alert, prices are
7 competitive. Baseline price was in the \$250 to \$300 range.
8 Observed prices were in the \$400 range.

9 During Stage One alerts, I see an average
10 price -- our competitive baseline was about \$200, compared to
11 an observed price of over \$300.

12 And during the other hours, the no alert hours,
13 which I believe represent about 90 percent of the hours, our
14 competitive baseline price would be about \$81, and the average
15 wholesale price was about \$120.

16 So, you can see the -- our baseline price does --
17 you know, our methodology does allow the price, or it does, you
18 know, accounting for supply and demand. We do have a higher
19 price during the staged alerts. But again, a significant gap
20 between actual prices and what our competitive baseline would
21 suggest.

22 SENATOR ESCUTIA: Okay.

23 CHAIRMAN DUNN: Senator Morrow.

24 SENATOR MORROW: Just so I'm on the same track
25 with you, Dr. Hildebrandt, it's easy to think of the exercise of
26 market power in terms of efforts to increase prices, but also
27 would you agree that the exercise of market power could be
28 accomplished by a buyer by underbidding demand, such as

1

1 decreased prices.

2 Do you agree with that?

3 DR. HILDEBRANDT: I think that was discussed last
4 week.

5 In our market, it just wouldn't -- I guess what
6 I'd say is, demand can run, but it can't hide. It can -- it has

7 some flexibility in the day-ahead market, but ultimately in
8 real-time, demand has to buy.

9 SENATOR MORROW: I understand. You have the
10 whole issue of the inelasticity of demand itself, and they're
11 stuck with that.

12 But at least in the reports that I've read, and
13 the Auditor's report and such, it did note that on the other
14 side of the coin, from generators who are suppliers overbidding
15 the availability of supply, that you had buyers perhaps
16 underbidding their demand in an effort to try and decrease
17 prices.

18 I mean, if that was so, would that be an attempt
19 at the exercise of market power on the part of buyers?

20 DR. HILDEBRANDT: No, I wouldn't characterize it
21 that way.

22 First of all, I think they always did bid in --
23 offer to buy their demand. The question is, at what price. It
24 didn't clear oftentimes the PX market because their demand
25 curve, you know, they weren't willing to pay the prices that the
26 suppliers offered. Ultimately, in real-time, then, the ISO
27 would buy the power for them.

28 SENATOR MORROW: In view of that, then, how would
1

1 you characterize? There's been an issue discussed of buyers
2 underscheduling their demand. That's what I'm referring to.

3 And as far back as in March of 1999, the ISO
4 market analysis, at least according the Auditor, reported to the
5 FERC and the PUC their concerns about investor-owned utilities
6 doing precisely that, underscheduling their demand.

7 DR. HILDEBRANDT: What they would do, they were
8 trying to minimize their costs as buyers. Their costs are the
9 function of what they buy, and the price on the PX market, and

10 then what they buy, and the price in the real-time market.

11 So, there is a point in the day-ahead market
12 where they would -- they would have a price point at which they
13 would not want to buy any more at that price. Typically, that'd
14 be based on knowledge of the what they would pay in real-time.
15 And they would certainly seek to minimize their costs in the two
16 markets, splitting up their purchases in the two markets.

17 SENATOR MORROW: But you wouldn't --

18 DR. HILDEBRANDT: I would not characterize that
19 as the exercise of market power.

20 SENATOR MORROW: Or the attempted exercise.

21 DR. HILDEBRANDT: No, I would not.

22 SENATOR MORROW: Okay.

23 CHAIRMAN DUNN: Eric, we interrupted you. Do you
24 remember where you were?

25 DR. HILDEBRANDT: Yeah, I was covering the first
26 study.

27 CHAIRMAN DUNN: Right.

28 DR. HILDEBRANDT: I think one thing I didn't note
1

1 is, this is actually very similar to analysis that Dr. Wolak has
2 done and referenced several times last week. He talked about
3 his measures of market power. And this is very much based on
4 the similar methodology. We, you know, make minor differences
5 in the data that we use, some of the assumptions about the data,
6 but it's fundamentally the same basic approach applied to
7 actualize their data.

8 Again, that's driven in large part, you know, the
9 MSC is an advisor to the ISO, and certainly advises on how to
10 look at market power.

11 So, I guess first I'm summarizing the system
12 level analysis, or analysis of market power at a system level

13 that we've done.

14 The second part of report, and I'll just note
15 there that that is a classic measure of market power used by
16 economists. It's the price-cost markup. It's comparing, you
17 know, the marginal costs of the highest cost supplier needed to
18 meet demand to actual prices. And that is classic measure in
19 economics literature of market power. It is based on short-run
20 costs, albeit of the highest cost supplier.

21 So, another measure some economists propose is to
22 look at the cost of new investment, with a theory that resulting
23 prices when new investment is needed, they should yield prices
24 that are sufficient to cover the cost of new investment. It's
25 sort of a -- it's a longer run view in terms of the competitive
26 price that one might compare market outcomes to.

27 So, the second part of the analysis really took
28 the result, the actual observed prices. We also took our

1

1 competitive market baseline price that we had calculated, and we
2 looked at the cost of a new combined cycle plant locating in
3 California, and looked at the economics of that.

4 And the fundamental conclusion there was, that
5 prices over the last year were roughly double what it would take
6 to cover the cost, including fixed investment, of a new combined
7 cycle plant. The competitive baseline price was roughly double.
8 Actual prices were three to four times as high as would be
9 needed to cover the cost of new investment.

10 So, the finding there, or how we tied that to our
11 FERC filing was, we thought clearly there's -- it's another
12 indication of market power, using another test. And it also
13 suggested that prices could be significantly mitigated, perhaps
14 down to our competitive level, without deterring investment in
15 new supply in California.

16 So, we thought that was an important point, and
17 in fact, made that because, in response to some of the arguments
18 we had seen being made for reasons why stronger market power
19 mitigation may not be appropriate.

20 I guess the third -- the third part of the
21 analysis is to -- or a third leg, I think, is to drill down and
22 look at individual suppliers.

23 When presented, kind of, with the evidence in my
24 reports, I think the reaction of FERC, or some observers was,
25 well, still these high prices may have just resulted from market
26 design flaws, rather than any intentional effort to raise the
27 price by suppliers.

28 So, we thought it was important to drill down to
1

1 that next level and demonstrate -- provide additional evidence
2 that no, this wasn't just due to market design flaws, but
3 rather, you know, the exercise of market power by specific
4 suppliers.

5 Dr. Anjali Sheffrin's study will cover that in
6 more detail. And our filing was designed to kind of make that
7 third point in her testimony.

8 I'll just note, I think I do note in my report
9 some of the previous references to that to FERC. We did -- we
10 had drawn FERC's attention before to the fact, you know, you can
11 verify. The simplest way is to compare in the real-time market
12 a supplier's bids to their marginal costs, and look at that over
13 time. And if there's a clear pattern there of bidding above
14 costs, it certainly suggests the market is not operating
15 competitively.

16 So, that covers my March report.

17 The final report, you referenced it as the second
18 report, was really a follow-up analysis. One of the things we

19 did in the first report was extrapolate from our competitive
20 baseline the difference between that and actual market prices,
21 extrapolate to the total of non-utility wholesale market in
22 California. And when we did that, we did estimate potential
23 wholesale impacts in excess of \$6 billion over, I think, since
24 May of 2000.

25 So again, there we wanted to take the 30 percent
26 markup number and really put it in context and show what that
27 translated into was billions of dollars for California
28 consumers.

1

1 In response, FERC did request a rather quick
2 analysis, just aggregating the \$6 billion into different
3 markets. Precisely which markets this would have been incurred
4 in, which months, and specifically, which sellers.

5 So, although the original study was not designed
6 to do that, we undertook a second analysis, more of a bottom-up
7 analysis, where we took individual schedules, and bids, and
8 real-time transactions by seller, and calculated the difference
9 between our competitive baseline price and the price they
10 received, either for a sale in the PX, or a sale in the ISO
11 market.

12 There's also a large segment of the market are
13 bilateral schedules or transactions where we don't have actual
14 transaction data. One of our assumptions in the explicit
15 assumptions in the initial analysis was that we used the PX
16 price as a proxy for these bilateral markets. And we continued
17 that assumption in the supplemental analysis to FERC in
18 disaggregating the \$6 billion.

19 When we did that, we did get -- you know, we
20 continued to get potential costs in excess of \$6 billion. But
21 when one does look at it -- I'm looking at Page Nine of the

22 supplemental briefing that I supplied last week -- roughly 2
23 billion of that was incurred --

24 CHAIRMAN DUNN: If I can interrupt you. We're
25 going to pull it up so everybody can see it.

26 I think I mentioned Page Four?

27 DR. HILDEBRANDT: Page Nine, Figure Four.

28 CHAIRMAN DUNN: This is on the briefing,

2

1 everybody. It's item, if you've got this little index that we
2 passed around, it's Item Number Four.

3 For the audience, what we're referring to is what
4 I referenced in my introductory comments, that Dr. Hildebrandt
5 had prepared a briefing paper, summarizing basically the reports
6 and so forth. That's what we're referring to here.

7 SENATOR MORROW: I apologize, Mr. Chairman. Item
8 Four.

9 CHAIRMAN DUNN: This is the way they are in the
10 computer here.

11 SENATOR MORROW: Do we have this thing contained
12 in this notebook?

13 CHAIRMAN DUNN: You do.

14 SENATOR MORROW: Where is that at?

15 CHAIRMAN DUNN: I don't know, but let me find it
16 for you real quick.

17 Which part do you want to zero in on, Eric?

18 DR. HILDEBRANDT: Just the graph, the top half.

19 CHAIRMAN DUNN: We'll enlarge it so you can see
20 it.

21 DR. HILDEBRANDT: This is the same information
22 that's provided in numeric format in report to FERC. I made a
23 chart out of it to try and make it easier to visualize and
24 describe.

25 You'll see there, our March 22nd report did,
26 based on extrapolation, show about \$6.7 billion of potential
27 costs in excess of an hourly competitive market baseline price.

28 We did, you know, going through individual 2

1 schedules and transactions, identify roughly \$2 billion in
2 excess of our competitive baseline incurred in the ISO's
3 real-time energy market. That's the dark segment -- the darkest
4 segment of the bar on the right side.

5 There's about, I think, \$.4 million in the ISO
6 ancillary service market, which is our capacity payments for our
7 units.

8 There's also, I believe it's about 1.5 billion in
9 the PX energy market, direct transactions in the PX market.

10 And the final top section, about \$2.7 billion is
11 a -- I would call that the bilateral market. These are simply
12 schedules that the ISO receives from different market
13 participants. We do not know the transaction price. These may
14 be bilateral transactions, some degree of pre-existing
15 contracts, et cetera.

16 So again, one would have to have additional data
17 to -- on actual transactions price, to do an analysis of this
18 market.

19 The other thing we did, the next page chart, just
20 by way of explanation, FERC wanted us to chop this up by
21 jurisdictional and nonjurisdictional sellers by month and by
22 market, I believe on FERC's belief that their jurisdiction to
23 order any refunds might be limited to, you know, the ISO and PX
24 markets, and only entities with market-based rate authority in
25 those markets. And that further more, it might be limited by
26 the October 2nd date, triggered by a filing, basically, a case
27 when the investigation was opened.

28 CHAIRMAN DUNN: Let me interrupt you, Eric.

2

1 For those that are unfamiliar, what is that
2 October 2nd investigation that was opened?

3 DR. HILDEBRANDT: Okay.

4 When prices spiked this summer, FERC opened an
5 investigation. There was also a complaint filed with FERC. I
6 believe it's a 206 Complaint by San Diego and a number of other
7 parties of consumers, and requesting an investigation by FERC,
8 an action, on the grounds that the rates being observed in the
9 market were unjust and unreasonable.

10 I believe there's a 60-day period from when that
11 complaint was filed and accepted by FERC for investigation when
12 they believe any refund authority might begin. So, counting 60
13 days from the opening, or the filing of that complaint, I
14 believe is October 2nd, and that's a date that has some
15 significance in terms of -- potential significance in terms of
16 refunds.

17 So, the first chart, I'm really just taking, you
18 know, on the left, I carried over the same bar, the 6.7 billion.
19 I'm just showing you, if I chop that into FERC jurisdictional
20 and non-FERC jurisdiction, you can see there a significant
21 portion, particularly of the real-time sales, would be
22 nonjurisdictional sellers. This would include public utilities,
23 federal entities, and state entities.

24 SENATOR BOWEN: Question.

25 Just on the concept of how the sales by
26 jurisdictional entities relate to prices that are then charged
27 by others over whom FERC does not have jurisdiction, what
28 would happen if the sales of those entities who are under the

2

1 jurisdiction of FERC were limited? What impact would that have

2 on prices charged by public agencies and other sellers?

3 Would they still continue to float up that high?

4 Or would that have the impact of bringing the overall prices

5 down?

6 DR. HILDEBRANDT: I'm not sure I understand the
7 question.

8 I'm thinking of it in two different ways. I
9 mean, one, I mean --

10 SENATOR BOWEN: Let's try it the simple way. I
11 was trying to make it more complicated than it needs to be.

12 Much ado has been made over the amount of money
13 that Bonneville Power Administration, LADWP, and various others
14 have made.

15 My assumption is that their ability to charge a
16 thousand dollars a megawatt hour only arises because that's
17 where the market is. And if the market's dysfunctional, they
18 get a ride on the surf board of the dysfunctional market.

19 If you control the other parts of the market,
20 presumably, they no longer have the opportunity to take a ride
21 at those high price levels. That's my assumption.

22 I need to know if that's accurate or not.

23 DR. HILDEBRANDT: Sure, yeah.

24 And an important note here, this part of the
25 analysis makes no connection with, you know, what revenues one
26 may have received and their bidding activity, how -- you know,
27 to the extent they might have exercised market power, or merely
28 benefitted by the exercise of market power by others.

2

1 SENATOR BOWEN: But even assuming that the
2 behavior of those participants is not the problem, just what
3 happens as a result of where the market is to generators, the
4 power producers like LADWP, Bonneville, Power X, who are not

5 within the jurisdiction of FERC? And how would a market
6 structure that prevents market power exercised by FERC-regulated
7 generators affect prices paid to those other entities?

8 DR. HILDEBRANDT: I think the connection -- one
9 thing about market power, I think it is -- there's kind of a
10 vicious circle, or this circular effect, which is -- is that the
11 exercise of market power increases market power, increases
12 expectations of market power, increases perhaps the replacement
13 cost of hydro energy, hydro pump storage certainly. A lot of
14 these --

15 SENATOR BOWEN: So, you're telling me the
16 psychology of it is sort of like NASDAQ to 5100, that the more
17 it goes up, the more it goes up, because people come to expect
18 that that's what's going to happen.

19 DR. HILDEBRANDT: And part of that psychology, in
20 some cases, a unit's supply cost, if they're not thermal, their
21 supply cost may, in fact, be tied to the price of power. And to
22 the extent that price of power is inflated by market power, then
23 they need to charge more. Their cost basis is higher.

24 I just would use pump storage as an example. If
25 I'm literally pumping at night at, you know, on PX prices, and
26 then I'm selling during the day, my cost basis would be a PX
27 price, which might be greatly inflated by market power, but
28 nonetheless, that's my cost of filling my pump storage unit.

2

1 So, there's this kind of circular effect. It's
2 very difficult to disentangle. You need a lot of
3 seller-specific information.

4 This is an accounting exercise, you know. And I
5 can't emphasize enough, this is an accounting exercise. It's
6 not designed to attribute, you know, or identify exercise of
7 market power by specific entities, or the actual refund that

8 might be incurred by individual entities.

9 SENATOR BOWEN: I think my question's actually
10 more general.

11 What I'm trying to understand is, the extent to
12 which the exercise of market power by one, two, or small number
13 of market participants can drive the entire market upward in a
14 spiral.

15 I mean, that's what it looks like to me, but I
16 don't have a degree in economics and energy pricing.

17 DR. HILDEBRANDT: No, and that's the point I
18 would just make based on, you know, having looked at the market
19 this summer. There's a great degree of -- it is -- it reminds
20 me of inflation, you know, back when there was this expectation
21 of inflation embedded in the economy. It was very hard to wring
22 out.

23 And when you get the expectation of market power,
24 you get that perpetuated in power sales, you know, as bilateral
25 transactions are made, and then that is -- you know, somebody
26 has encouraged that price.

27 SENATOR BOWEN: Again, and that's a looking
28 forward question, where I'm trying to understand what the impact
2

1 might be of getting control over some parts of some number of
2 market participants, because FERC has made the case over and
3 over again that we can't do certain things effectively because
4 not all of the generators, traders, et cetera, are within our
5 jurisdiction.

6 But my question is, to what extent does the
7 market, by its very nature, sort of wrap everybody in together,
8 regardless of legal jurisdiction?

9 DR. HILDEBRANDT: Yeah, they do. And I can't get
10 into the legal jurisdiction.

11 I guess just -- I think the key to unwinding it
12 is, I think, the thermal and other generators under FERC
13 jurisdiction, if their market power is mitigated, that's the key
14 to unwinding kind of this circle that I'm referencing to, and
15 the fact that all sellers may not be under FERC jurisdiction,
16 but I guess to me is not a reason not to mitigate, you know, the
17 market power of those under FERC jurisdiction.

18 Does that answer?

19 SENATOR BOWEN: Yes, it is helpful.

20 CHAIRMAN DUNN: Anything else, Eric?

21 DR. HILDEBRANDT: Just a final cut, just to show
22 you how this goes down further if one looks at the market from a
23 pre-October period. This would be the next page, I think, has a
24 similar chart.

25 This next chart simply chops those down or
26 reduces them further. Actually segments them further into -- on
27 the middle bar, shows the May through September period, and then
28 the last bar shows the October through February period --

2

1 You do see there, you know, using perhaps the
2 narrowest definition of a refund -- potential subject to refund,
3 it would be about \$1.3 billion in, you know, FERC jurisdictional
4 sellers in FERC, in PX and ISO markets after October 2nd.

5 So, that, I think, concludes my summary of the
6 two reports I've done, and how they relate, I think, to the
7 overall filings they were included with.

8 CHAIRMAN DUNN: I'm going to drag you into a
9 little more detail on some of it, Eric, if you don't mind.

10 Donna, same exhibit, Page Five. If we can do the
11 first bullet point that starts, "As part of our comments," and
12 I'm going to go through these rather rapidly.

13 You see the first paragraph that we're referring

14 to? This is out of your briefing paper.

15 DR. HILDEBRANDT: Yes, I do.

16 CHAIRMAN DUNN: The reason I raise this, you
17 basically talked about it. But the very last phrase says,
18 "rather than to allege specific 'overcharges' that should be
19 subject to refund."

20 This was your testimony before, that your focus
21 wasn't on determining what amounts above the competitive bidding
22 price really should be subject to overcharges. It was simply
23 its relationship to the use of market power.

24 DR. HILDEBRANDT: Yes, and the word overcharge, I
25 believe, was used, you know, just immediately by -- in the
26 press. The report was characterized as quantifying overcharges.

27 And I want to take this opportunity to, you know,
28 clarify.

2

1 It was not intended -- it was not used -- in
2 fact, overcharge does not appear in the report. And there's a
3 more detailed level of analysis that one would have to do to get
4 to potential overcharges, typically based on a lot more
5 information we simply don't have, and that only FERC, I believe,
6 could compel suppliers to provide.

7 CHAIRMAN DUNN: Do you know, is FERC making that
8 analysis, to your knowledge?

9 I don't want you to speculate if you don't know.

10 DR. HILDEBRANDT: Yeah, I don't want to speculate
11 to the degree they might be utilizing.

12 Certainly one of the reasons we undertook the
13 follow-up analysis was to do everything we could to facilitate
14 any analysis FERC was doing on the issue of overcharges.

15 CHAIRMAN DUNN: Okay.

16 I want to skip to the next bullet point, Donna.

17 As she's bringing it up, it says, "The first of these reports
18 was a top-down analysis," et cetera, et cetera.

19 Real briefly for us lay people, what do you mean
20 by top-down analysis?

21 Eric, I'm going to just throw the second
22 question, the bullet point down toward the bottom of the page,
23 that says, "In response to," you refer to that one as a
24 bottom-up accounting.

25 Just explain the difference for us.

26 DR. HILDEBRANDT: Okay. First of all, the way we
27 actually calculate the competitive baseline price is not
28 top-down. That's very much a bottom-up number.

2

1 I characterized it as looking at actual supply
2 and load conditions.

3 We look at that based on unit level availability,
4 output, et cetera, on an hourly basis.

5 So, we calculate the competitive baseline price
6 very much on a bottom-up.

7 But then, when it comes to extrapolating in terms
8 of total potential cost, we simply took the hourly results. Say
9 my competitive baseline was \$50, and average wholesale prices
10 were 100, we simply applied that \$50 difference to the total ISO
11 load, minus what we had identified as utility-owned generation.
12 So, that's what I mean by a top-down.

13 It's literally, we take a system level number
14 that's reported for the ISO, subtract out utility generation,
15 and extrapolate in that manner. And that's why I used the word
16 top-down there.

17 CHAIRMAN DUNN: Okay, and basically your March
18 report that you've already talked about, that was the top-down.
19 Your April 9th report that we'll take a little bit about, that

20 was the bottom-up?

21 DR. HILDEBRANDT: Yeah, correct.

22 CHAIRMAN DUNN: I know that Dr. Sheffrin's going
23 to be following you and testifying herself, but hers is the
24 third report we're going to deal with today. That basically
25 looked at individual behavior by individual participants?

26 DR. HILDEBRANDT: Correct. It's more along the
27 lines of the bottom-up, and goes beyond -- again, I emphasize,
28 this was more of an accounting exercise versus getting to the
3

1 individual exercise of market power.

2 CHAIRMAN DUNN: Okay.

3 Donna, can we bring up Number Two on your index.
4 Let's go to the Executive Summary, Page Two, going into your
5 March report, which you just described as a top-down analysis.

6 I'm going to the second paragraph, about fourth
7 line. It starts, "Results show that," and then highlight the
8 rest of that paragraph from "Results" down.

9 Do you see where I'm referring to?

10 DR. HILDEBRANDT: Yes, I do.

11 CHAIRMAN DUNN: It says:

12 "Results show that after
13 incorporating potential
14 NOx costs and hours of
15 resource scarcity into
16 the analysis, over 30% of
17 wholesale energy costs
18 over the last year can be
19 attributed to market
20 power, or a level that
21 clearly exceeds the range
22 that may be consistent

23 with a workably
24 competitive market. The
25 results clearly show that
26 market power is not
27 limited to hours when a
28 deficiency in operating

3

1 reserves requires the ISO
2 to declare the existence
3 of a system emergency. "

4 Can you just give us a little more detail? I
5 know you talked about it briefly, but we're lay people. Educate
6 us a little bit.

7 DR. HILDEBRANDT: Okay.

8 Well, I think the first -- another point I
9 haven't made yet. You know, I talked about how the 30 percent
10 markup, or price in excess of competitive levels, accounts for a
11 wide range of supply and demand conditions.

12 What I didn't mention was absolute hours of
13 potential, absolute resource scarcity. I guess as an economist,
14 we would define or we have defined scarcity as not simply tight
15 supply and demand conditions, but where supply simply isn't
16 sufficient to meet demand.

17 We calculate demand as system load for energy,
18 plus a 10 percent capacity reserve margin, which we thought was
19 rather generous. And then we looked at all the available
20 supply, and on an hourly basis, flagged hours which we felt
21 there was true resource scarcity, meaning not enough capacity to
22 meet demand, or energy plus demand, reserve demand.

23 And those hours, think of it as, we threw those
24 out of the analysis in one version of it for FERC. And it still
25 showed that prices were in excess of -- the 30 percent number is

26 throwing out the hours of potential scarcity.

27 Again, we did that. We looked at that additional
28 factor because that was another issue raised by FERC and other
3

1 commenters as kind of explaining the high prices. And, you
2 know, if you account -- suggesting that if you accounted for
3 that, somehow prices would be in line with competitive levels.
4 And we just wanted to further demonstrate this was not the case
5 based on the empirical analysis we had done.

6 So, first of all, the 30 percent does include
7 hours of potential scarcity.

8 We looked at it another way. The scarcity number
9 was our calculation. System emergencies are related to scarcity
10 but not quite the same.

11 One way I think of it is, the system emergencies
12 are -- probably we may get into system emergency before --
13 certainly before we have absolute scarcity. They're somewhat --
14 the people don't bid or offer demand into our markets, that can
15 trigger a system emergency.

16 Rather, our accounting after the fact really
17 tried to account for all the available capacity. So, it might
18 suggest that even when we were in some system emergencies, there
19 was not absolute scarcity.

20 So, there's many more hours where we're in a
21 system emergency. But we did, again, to address FERC's concern,
22 or to address or to demonstrate the limited mitigation they were
23 offering in their proposal, we chopped up or disaggregated the
24 results over the last year by the system emergency hours.

25 And I believe it was the table we referred to
26 earlier. And here it's summarized as about 80 percent of the
27 additional cost above the market baseline were incurred, I would
28 say incurred, during non-emergency hours when we were not in a

1 Stage Three.

2 So, the finding there was, their initial proposal
3 might mitigate 20 percent of the market power, but it left the
4 other 80 percent unmitigated, based on our analysis.

5 CHAIRMAN DUNN: Was that conclusion of that
6 finding a bit of a surprise?

7 DR. HILDEBRANDT: Not to me. I think it was to
8 some people.

9 It was not to me because, having worked with the
10 model, I knew we kind of -- you know, we had high prices during
11 true emergency hours in our model, because we were modeling
12 that. And the fact that we were using high cost generation.

13 So, no, it was not a big surprise to me. I think
14 it was enlightening to a lot of people, or surprising.

15 CHAIRMAN DUNN: Okay.

16 Donna, let's go to the very next paragraph. Just
17 highlight the whole thing.

18 As we highlight that second paragraph, which was
19 in your Executive Summary of that March report, and I know you
20 referenced basically what's in this paragraph in your earlier
21 comments.

22 In particular, I want to try to understand the
23 first sentence, "wholesale prices are examined in relation to
24 the cost of investment in new supply."

25 And you mention in your next sentence that some
26 have "expressed concern."

27 Who's been expressing concern about that with
28 respect to the cost of investment?

3

1 DR. HILDEBRANDT: I can't cite a specific party,
2 but I could easily find that.

3 In comments, and I guess I'm basing it on
4 probably there are many formal comments to FERC suggesting that
5 if you -- price caps will kill investment and decrease supply in
6 California.

7 I'm sure I could dig up some references. So, I
8 think formal ones filed with FERC, as well as plenty of informal
9 statements in public forums to that effect.

10 CHAIRMAN DUNN: Lots in this building, I would
11 suspect, as well.

12 DR. HILDEBRANDT: Yes.

13 CHAIRMAN DUNN: So, that part of the study was
14 designed to really assess the accurateness of that particular
15 argument?

16 DR. HILDEBRANDT: To address that argument, and,
17 I think, even there's another audience might be -- there is,
18 you know, some economists who would feel the other benchmark
19 might be too stringent and want to look at this as another
20 benchmark of a competitive baseline price. It's kind of looking
21 at long-run costs versus short-run marginal costs, looking at
22 long-run average costs. It is another benchmark some economists
23 use, so it was designed for that audience as well.

24 CHAIRMAN DUNN: And specifically, Donna I want to
25 go to, in that paragraph, the sentence that begins, "On an
26 annualized basis," about the middle of the paragraph. It says:

27 "On an annualized basis,
28 wholesale energy prices

3

1 since January 2000 are
2 exceeding the cost
3 necessary for new
4 investment by about 400%,
5 and would allow recovery

6 of an investment in new
7 supply in a period of
8 less than two years."

9 Can you turn that into real numbers for us in a
10 hypothetical case, and what are you referring to there?

11 DR. HILDEBRANDT: If you give me a moment, I
12 will.

13 I guess, well, one way to think about the cost of
14 new supply is, I'm a new supplier. I have a fixed, an annual
15 fixed revenue requirement.

16 You can do a lot of different assumptions about
17 what it cost me to build a plant, my interest rate, my pay-back
18 period, et cetera.

19 But then, you can boil that down to an annual
20 revenue requirement. And I used a range of numbers there. I
21 believe in my report it was from the \$70 to \$90 range. I think
22 highest you might get would be 100, but let's just, for
23 simplicity, say it's \$100. I need \$100 per kilowatt a year; I
24 need to recover that in operating costs to cover my operating
25 costs, my capital costs, and a profit. So, that number does
26 include the rate of return in there.

27 So, I started with that number. So, to put it in
28 simple terms is, I need \$100 to cover the cost of my plant. And
3

1 over the last year, I would have earned, you know, a net
2 operating income of \$400 on that plant.

3 And likewise, I guess, we also put in our
4 competitive market baseline. Again, some might feel that's too
5 stringent; but however, it did indicate that it would have
6 yielded operating profits, or operating revenues, of over \$200
7 per year per kilowatt or installed capacity.

8 Think of it as a return on my fixed investment.

9 CHAIRMAN DUNN: Two years seems to be pretty
10 short.

11 DR. HILDEBRANDT: Correct, yes.

12 CHAIRMAN DUNN: Is there kind of a normal time
13 period?

14 DR. HILDEBRANDT: Yeah, I believe in the power
15 plant business, it would be more, I think, 10 years to 20 years
16 would be a typical period.

17 CHAIRMAN DUNN: All right.

18 I want to go, Donna, over to Page Five. I'm just
19 going to pick on certain points in this particular report, just,
20 again, to gain some understanding on a few points.

21 I'm in the second paragraph of that page that
22 starts, "This section provides ..." Actually, I want to go to
23 the third-to-last line, "In addition, several modifications have
24 been added," see that one? That whole sentence.

25 I'm referring to the following sentence, Eric:

26 "In addition, several
27 modifications have been
28 added to account for the

3

1 dramatic changes in market
2 conditions, design and
3 structure starting in
4 December 2000. "

5 Can you tell me what you're referring to there?

6 DR. HILDEBRANDT: Okay, this refers to our
7 competitive market baseline, the calculation of that.

8 I'll start by saying, really the whole modeling
9 approach sort of simulates the single-price auction. We
10 calculate demand. We look at all available supply. We then
11 kind of go up the supply curve as far as we need to -- to meet

12 demand, and that's the, you know, the competitive price.

13 So, we're really simulating the single-price
14 auction. Starting in -- and until December, that parallel, or
15 that was in fact how the California markets were designed to
16 work.

17 The single-price auction, in fact, if it's in a
18 competitive market, gives suppliers the incentive to bid their
19 marginal costs, knowing they will get paid the market clearing
20 price.

21 And starting in December, however, we were under
22 what I would call an as-bid market in California. Others have
23 called it the soft cap. In other words, any bid over a certain
24 threshold, there was a threshold set for the single-price
25 auction. It was \$250 in December. But any bid above that would
26 be paid as bid if it was needed to meet demand.

27 So suddenly, suppliers, kind of the single-price
28 auction paradigm, was changed and we entered an as-bid paradigm³

1 In an as-bid market, I guess one advantage of it is, if people
2 want to get paid that much, they have to ask for it. They
3 can't, you know, accept a high price set by, you know, other
4 sellers, or only in part by them. They have to ask for that.

5 So, there's kind of a disconnect, then, between
6 our modeling approach, but we continued to model the market
7 under the single-price auction design to get our competitive
8 baseline. But we calculated market cost on an as-bid basis.

9 The modifications that I'm referring to include,
10 I believe, in the real-time market, prior to December, we took
11 real-time bids from imports as on an as-bid basis. We kind of
12 assumed the bid price was competitive price in order to be
13 somewhat conservative. Starting in December, however, we
14 couldn't do that because there's -- you know, on an as-bid

15 market, they were clearly not bidding their costs. They didn't
16 have an incentive to do that.

17 Rather, in an as-bid market, they have incentive
18 to ask -- to bid what they think they can get in that market.

19 So, I believe we no longer treated imports, you
20 know, we no longer kind of put them in the bid stack or the
21 supply stack at their bid price.

22 And the other major modification we needed to
23 make was that the PX really started to -- there was a very low
24 volume there in December and January, and it ultimately
25 disappeared in February. So, we stopped using the PX price as
26 our wholesale market price, and we started using the ISO
27 real-time price as our best indicator of what the wholesale
28 market was transacting at.

3

1 CHAIRMAN DUNN: From a lay person's perspective,
2 Eric, did any of those changes improve or hinder your ability to
3 continue to monitor the market for potential market power?

4 DR. HILDEBRANDT: Well, I touched on one. In a
5 way, the as-bid market, the good thing about it is, it makes
6 people ask. You know, they have to come out and ask for what
7 they want to be paid.

8 However, mitigation of those prices, then, was
9 within the realm of FERC's jurisdiction or discretion.

10 So, on one hand, I guess, it made the exercise of
11 market power a little less -- or little more transparent, I
12 believe.

13 The demise of the PX market also creates a much
14 larger segment of the market for which we don't have price
15 information. So, there is a significant decrease in price
16 transparency due to the demise of the PX.

17 CHAIRMAN DUNN: And the only entity with that

18 information now is who?

19 DR. HILDEBRANDT: With much of the transaction
20 price would be essentially the sellers and the buyers. It's
21 like a bilateral transaction, in that category.

22 CHAIRMAN DUNN: Okay, so to get that information,
23 we'd have to go directly to that source?

24 DR. HILDEBRANDT: Correct.

25 CHAIRMAN DUNN: Let's go to Page Seven.

26 This is the section, and I'm just going to touch
27 upon it briefly, Eric, "Updated Results Including Potential NOx
28 Emissions and Scarcity."

4

1 And you've already talked about how your
2 conclusions were, that even accounting for this, market prices
3 still exceeded the level consistent with the workably
4 competitive wholesale market, which is the top paragraph.

5 It's the second bullet point. It says:

6 "Over the most recent 12
7 month period (which
8 includes the first two
9 months of 2001), results
10 show that the gap
11 between wholesale prices
12 and competitive levels
13 continues to grow."

14 That brings us basically to the end of February.
15 Have you done any analysis, and I know we're getting to April,
16 your April 9th report. Is that gap, and here we are at the end
17 of April, continuing to grow?

18 DR. HILDEBRANDT: I believe the distressing thing
19 is, on an absolute level it's growing. We do -- in our
20 competitive baseline, we assume everybody's paying this very

21 high spot market price of gas. I think that's one of the
22 conservative assumptions we use in our analysis.

23 But assuming that, you can see our baseline is
24 still quite high, at \$12 or \$15 gas. You know, we have \$150 to
25 \$200 baseline many hours. Prices are in the -- I checked this
26 morning -- you know, \$300 to \$400 range.

27 So, I think the markup is certainly, on an
28 absolute level in terms of total dollars, is much higher. It's
4

1 in the \$100 to \$200 range.

2 Thirty percent, you know, when prices were back
3 \$60, you know, 30 percent of \$60, you know, looked a lot better
4 than 30 percent of \$400.

5 So, while I think -- and I think our monthly
6 results show -- I don't know for March -- that the 30 percent
7 figure was carrying over to these months the absolute dollars,
8 you know, get in the, you know, hundreds of millions pretty
9 quickly, I think, given the baseline is so high.

10 CHAIRMAN DUNN: Let's go to 10. This is one
11 entitled, "Overall Impact of Market Power on Consumer Costs."
12 What I want to do is highlight the graph you'll find on that
13 page, Donna.

14 This is referring to what you talked about in
15 your opening comments, and I'll read one sentence:

16 "... the degree of market
17 power observed in California
18 wholesale market represents
19 additional costs of about
20 \$6.8 billion since May 2000.
21 Only about \$600 million of
22 these additional costs were
23 incurred during hours of

24 potential resource scarcity,
25 So that even excluding
26 these hours, wholesale
27 energy costs have been
28 driven up over \$6.2

4

1 billion since May 2000 by
2 the exercise of market
3 power. "

4 And the you've got this table.

5 Can you just real quickly, Eric, walk us through
6 the various columns you have here? I don't want to go through
7 line by line, but to identify what each column refers to.

8 DR. HILDEBRANDT: Okay.

9 The first column, I call it Column A, entitled,
10 "Net Wholesale Costs." This is what I've described before. We
11 take PX and real-time prices, and we apply them to the total ISO
12 system, subtracting out utility-owned generation. So, that's,
13 you know, if you look at the whole the ISO system as a market,
14 the logic of subtracting out the utility-owned generation is
15 that there, you know, it's money in one pocket and out the
16 other. It's by and large clearing the PX market. They're
17 paying the PX market and being paid that price.

18 So, we do take total system load, subtract
19 utility generation, and using that as, you know, the total
20 market, we're applying market prices to those transactions. As
21 I noted before, it includes a large segment of bilateral
22 transactions, and we're implicitly using the PX price in those,
23 to value those markets.

24 The Competitive Baseline Costs, Column B, would
25 be, taking those same volumes, but multiplying them instead by
26 our hourly baseline price that we calculate, and I've described.

1 therefore only necessary
2 during such system
3 emergencies. "

4 Do you know why the FERC was operating on that
5 premise, that market power is primarily exercised during Stage 3
6 emergencies?

7 DR. HILDEBRANDT: No, I don't, but that's almost
8 a quote. If I had the order, you know, I think the logic said
9 something like, because market power is most likely to be
10 exercised during Stage 3 hours, we apply this screen, you know,
11 during Stage 3 hours.

12 There is no empirical or other economic logic,
13 you know, explaining that assumption of FERC.

14 And I would say, it underlies two orders. It
15 underlied under this -- I've referred to the soft cap, but ever
16 since December 8th, all costs incurred over a certain threshold
17 are subject to refund based on further review by FERC. They
18 have, in their orders, limited the refund right out of the box
19 to only two hours where we were in a Stage 3 emergency.

20 The other -- so, that's on a kind of looking
21 backwards basis. They were limiting the refund to those hours.

22 On a going forward basis, their initial staff
23 report, I believe, proposed mitigating energy bids only during
24 Stage 3 emergencies. So, we saw that kind of logic in both, you
25 know, looking back and going forward, underlying their market
26 power mitigation actions.

27 CHAIRMAN DUNN: So, if we look at your next
28 sentence that goes:

4

1 "However, results of this
2 analysis also show that
3 market power is exercised

4 under a wide range of system
5 conditions rather than just
6 ... Stage 3 emergencies. "

7 I'm going to extrapolate from that, that
8 questions FERC's limitation to just Stage 3 emergencies?

9 DR. HILDEBRANDT: Absolutely. And we thought,
10 rather than just questioning, we would present, you know,
11 empirical evidence, you know, to that effect.

12 CHAIRMAN DUNN: Page 13, this is entitled,
13 "Wholesale Energy Prices Compared to Cost of New Supply. " I
14 know we've already talked about this. The one thing I want to
15 go to is the very last sentence that's in the indented
16 paragraph.

17 "' Monopoly rents' are
18 returns in excess of
19 those necessary to attract
20 capital that are reaped
21 through the exercise of
22 market power. "

23 Again, for the lay person, "monopoly rents,"
24 explain that.

25 DR. HILDEBRANDT: Actually, I think you'll find
26 slightly different definitions of monopoly rents even by
27 different economists. This is a quote. I am quoting an
28 economist from the Department of Justice who has submitted

4

1 testimony to FERC. So, I am here actually quoting, you know,
2 taking his definition.

3 He is -- because I think you'll get some
4 different definitions. This is the longer run view of it. I
5 would characterize this as defining monopoly rents based on the
6 long-run cost of new supply.

7 He's saying there that, I guess, in effect, he's
8 implicitly saying it's okay to exercise market power as long as
9 you don't drive the price up above the long-run cost of new
10 supply.

11 However, if you're able to drive up prices, and
12 if prices stay above the cost of new supply, that's an indicator
13 of monopoly power, because in a competitive market, firms would
14 quickly enter the market. They would seek prices in excess of
15 their long-run costs of new investment. They would quickly
16 enter the market and drive prices down to an equilibrium where
17 prices were in line with the cost of new supply.

18 CHAIRMAN DUNN: All right.

19 Anybody have any other questions on the March
20 report from Dr. Hildebrandt? Senator Escutia.

21 SENATOR ESCUTIA: With regard to the issue of
22 monopoly rents, Dr. Hildebrandt, were any of these generators
23 who obtained these monopoly rents, were they a subsidiary or
24 affiliate of the California investor-owned utility companies?

25 DR. HILDEBRANDT: Again, my study did not -- you
26 know, this report does not get into the individual, you know,
27 bidding behavior or profits of individual suppliers.

28 Your question, subsidiaries of the California
4

1 IOUs, so I can't answer that.

2 SENATOR ESCUTIA: You just cannot identify anyone
3 specifically in terms of these generators as to who benefitted
4 from these monopoly rents?

5 DR. HILDEBRANDT: Certainly, we can identify in
6 terms of market transactions. There's a great deal of power
7 sold in bilateral markets.

8 But when it's transacting in the PX or the ISO
9 market, yes, we can point to individual transactions where what

10 they received were in excess of a competitive level.

11 Additional analysis is necessary to show, or
12 demonstrate, or determine the extent to which their exercise of
13 market power contributed to, or was responsible for that high
14 price.

15 SENATOR ESCUTIA: Can we get that information,
16 Mr. Chairman, in terms of these individual transactions
17 identified by specific parties? Then, perhaps, you know, do
18 some type of an analysis as to whether this behavior was
19 sporadic or rather consistent?

20 CHAIRMAN DUNN: Those have already been
21 requested, Senator Escutia, from the generators. And that's
22 going to be part of Dr. Sheffrin's report as well, is zeroing in
23 on the individual behaviors as well, too.

24 SENATOR ESCUTIA: All right, thank you.

25 CHAIRMAN DUNN: You're most welcome.

26 Any other questions?

27 Eric, I want to go to your second report, and
28 much of it again, we've talked about. I'm not going to keep

4

1 everybody emerged in that detail. This is your April 9th, 2001
2 report. This is what you've described as the bottom-up report.
3 And this was actually generated by a FERC request; wasn't it?

4 DR. HILDEBRANDT: Yes.

5 CHAIRMAN DUNN: Again, I know you touched on it
6 before. What FERC request resulted in this?

7 DR. HILDEBRANDT: I believe May 30th, Friday
8 afternoon, we got a --

9 CHAIRMAN DUNN: May 30th?

10 DR. HILDEBRANDT: March 30th. I believe it was a
11 Friday afternoon, we received a rather extensive request. I
12 believe it's called the Letter Order from FERC, directing us

13 within a week to provide a variety of information and additional
14 analyses relating, by and large, to the reports we'd submitted
15 on the 22nd in conjunction with our filing.

16 We did a partial response the following Friday.
17 This portion of it was not provided until the Monday, because we
18 needed the weekend to do the work. So, this is one element that
19 they asked for, which was, in effect, a disaggregation of the --
20 or, you know, kind of a show-me, show me the transactions
21 underlying this \$6 billion number.

22 CHAIRMAN DUNN: Okay.

23 Again, I want to touch upon just few paragraphs
24 throughout, just more for clarification than anything else. The
25 report, I understand, speaks pretty much for itself.

26 I want to go to Page 1, Donna, third paragraph.
27 It's Item 3 on your index, Page 1. Third paragraph, third line
28 from the bottom, starts, "Electronic data," right there. It
4

1 says:

2 "Electronic data files
3 containing all the
4 confidential hourly schedule
5 and transaction level
6 records for each specific
7 market participant used in
8 this calculation are being
9 submitted to Commission
10 staff."

11 I think you even use the words, "the confidential hourly
12 schedule and transaction," et cetera.

13 Confidential under what, Eric? Is that by
14 agreement, by a FERC regulation? What's the confidentiality
15 that applies to these?

16 DR. HILDEBRANDT: This goes directly back to the
17 ISO's tariff. It is hourly schedule and transaction data. So,
18 since there's absolutely no aggregation of this data, it's the
19 raw data. It is specifically identified as being confidential
20 in our tariff.

21 CHAIRMAN DUNN: And that is data from each market
22 participant?

23 DR. HILDEBRANDT: Individual, correct.

24 CHAIRMAN DUNN: If I wanted to get that data from
25 the market participants, knowing that they may object and have
26 all kinds of other claims regarding those relating to
27 confidentiality, how would I describe these documents to you,
28 the market participants?

5

1 DR. HILDEBRANDT: Well, they would be final
2 hour-ahead schedules submitted to the ISO. Hourly sales in the
3 PX day-ahead and the ISO real-time markets.

4 But I should mention, I believe this is -- this
5 is precisely the data that would be covered under, I believe, a
6 request you've already made. The data's all there.

7 This particular -- these particular files might
8 be a little simpler. You know, they might be stripped down to
9 just the more essential data to do this calculation with, you
10 know, an identifier, maybe, merged into it. So, it's all the
11 same data, maybe a subset of that, showing a calculation.

12 CHAIRMAN DUNN: Is it voluminous data that we're
13 referring to?

14 DR. HILDEBRANDT: It's many megabytes, but in
15 these days, it can fit on one or more CD ROMs.

16 CHAIRMAN DUNN: It's producible in CD ROM form?

17 DR. HILDEBRANDT: Yeah, in fact, we delivered it
18 to FERC on CD ROMs.

19 CHAIRMAN DUNN: Go ahead, Senator Bowen.

20 DR. HILDEBRANDT: Just so you should know, I
21 wanted to give FERC a file where, if they added up each file,
22 they would get \$6 billion, and they could see that, the hourly
23 calculation being done.

24 SENATOR BOWEN: Does this data include only
25 generators, or does it include sales by those who are energy
26 traders only and who have no generation of their own?

27 DR. HILDEBRANDT: It would include all, yeah, all
28 suppliers, so both categories you referred to.

5

1 SENATOR BOWEN: It just deals with the end
2 sales. So, if energy has been traded five, six, seven, eight
3 times from the time it was first purchased to the time it was
4 sold to an end user, we would only see the end?

5 DR. HILDEBRANDT: Yeah, and that's really because
6 that's kind of what the ISO sees. You know, think of it as,
7 people schedule -- there's a final hour ahead energy schedule
8 submitted to the ISO. Now, a portion of that we know was
9 scheduled through the PX. We can trace stuff to the PX, and we
10 have access to PX data. But a large portion of that is not.
11 And then, finally, the real-time data, of course, we do know for
12 the in-state suppliers, we know the direct source for that, you
13 know, down to generating unit.

14 So, the traceability of the data is, you know,
15 fairly high in the real-time market, but not very direct as you
16 get to the hour-ahead schedules and bilaterals.

17 SENATOR BOWEN: Given that we can't trace all the
18 trading transactions, how do we ever hope to enforce the Federal
19 Power Act requirement of just and reasonable prices?

20 DR. HILDEBRANDT: Well, I would -- one assumption
21 that underlies a lot of our analysis is that, you know, it's

22 important to have some visible markets. The PX was a visible
23 market; the ISO's real-time market is a visible price market.

24 And we do, you know, economic theory would
25 suggest prices equilibrate. So, as long as you have some very
26 transparent, hopefully competitive, markets that, you know, that
27 is a good indicator or a benchmark that people use in bilateral
28 transactions.

5

1 But in the absence of, you know, the PX market,
2 we're down now to the real-time market. There's a couple other
3 regional indices out there, but they're kind of self-reported
4 and thinly traded. So, it is very difficult with a large
5 bilateral market of getting information on actual sales, what
6 people are selling.

7 I'm guessing, by and large, you would have to
8 have buyers come forward to declare what they paid for some
9 stuff. I guess you can get it from buyers or sellers. Every
10 bilateral transaction has two sides.

11 CHAIRMAN DUNN: Senator Morrow.

12 SENATOR MORROW: Quick question. It's my
13 understanding that FERC hasn't pursued the investigation in this
14 area. I think back in December, or whenever, they made the
15 observation, or their opinion was that in order to do so, to do
16 this tracing, it would be time consuming and next to impossible.

17 What I'm hearing here, I guess you're in
18 substantial agreement with that?

19 DR. HILDEBRANDT: Where there's a will, there's a
20 way. You know, it certainly requires the authority to get the
21 information and the resources to look at it and process it. So,
22 I would not underestimate the, you know, the amount of work
23 involved, but clearly, I think a large portion of it would be,
24 you know, you could get information on.

25 SENATOR MORROW: I think, at least among members
26 of this committee there's the will.

27 I guess what we're looking for is exactly what
28 and how do we communicate to FERC and others. What are we

5

1 looking for? The type of information, how is it obtainable? Is
2 it solely obtainable by FERC, or what?

3 DR. HILDEBRANDT: That's -- you're getting into
4 areas -- I'm not a lawyer. I don't totally know the -- I guess
5 my impression is that FERC has the ability to collect a lot of
6 this. And absent that, I'm not clear what other -- you know,
7 the powers that a state entity has created.

8 CHAIRMAN DUNN: Eric, I want to go on, Page Two,
9 to the fourth bullet point. It begins:

10 "Of these transactions in
11 the PX and ISO markets,
12 results show that
13 approximately \$3 billion
14 in revenues in excess of
15 competitive levels involved
16 sales by entities directly
17 under FERC jurisdiction
18 and holding market-based
19 rate authority."

20 Which I think we talked about before.

21 Are you allowed, Eric, to identify who those
22 entities are that you reference in that?

23 DR. HILDEBRANDT: I mean, I couldn't name them
24 all off the top of my head. I believe entities with
25 market-based rate authority are somewhere on the FERC web site.
26 That is public information.

27 I guess this is simply saying which of those sold

28 into the ISO markets, so I would have to -- again, that would be
5

1 the kind of information, I believe, provided in response to the
2 subpoena from the committee that would certainly be provided.

3 CHAIRMAN DUNN: Okay, but this particular report
4 didn't zero in and identify Company A, Company B, Company C?

5 DR. HILDEBRANDT: Certainly the appendix provided
6 to FERC identified by name. And that, I believe, would be
7 provided to the committee as part of the subpoena.

8 CHAIRMAN DUNN: Therein lies my question.
9 There's appendices, obviously, to this particular report that
10 were provided to FERC because this was at FERC's request?

11 DR. HILDEBRANDT: Yes.

12 CHAIRMAN DUNN: This particular report. And
13 those appendices identify the Company A, the Company B, the
14 Company C that you identified in these various categories?

15 DR. HILDEBRANDT: Correct.

16 CHAIRMAN DUNN: All right. And as you've just
17 identified, we have the subpoena. I don't know if it's actually
18 physically gone out yet, but we think it has, and it will be
19 part of that, so okay.

20 SENATOR ESCUTIA: Before you leave that bullet
21 point, what about the last sentence that says:

22 "About \$1 billion involves
23 transactions by public
24 entities ... whose sales
25 are not under FERC
26 jurisdiction."

27 Am I to assume that maybe we, the State of
28 California, can perhaps get some information involving these
5

1 participants and their transactions?

2 DR. HILDEBRANDT: I think, well, yeah.

3 Again, not being a lawyer, I'm not familiar with
4 the avenues you might have there.

5 SENATOR ESCUTIA: Can you identify them,
6 Dr. Hildebrandt? Who are those participants and public entities
7 not under FERC jurisdiction?

8 DR. HILDEBRANDT: Oh, and actually, I should
9 qualify that because I think different -- you know, there's
10 probably legal opinions, you know, somewhat different legal
11 opinions.

12 A correct statement is, they don't have
13 market-based rate authority from FERC.

14 I know another view I've heard is that by selling
15 into the PX and ISO markets, you kind of make yourself
16 jurisdictional to some extent.

17 But, I mean, it includes municipals, federal
18 power agencies, and state agencies, I think, are the big three
19 categories.

20 SENATOR ESCUTIA: Mr. Chairman, then am I to
21 assume that the subpoena that we have issued, would it also
22 extract that information with regard to the \$1 billion of sales
23 not under FERC jurisdiction?

24 CHAIRMAN DUNN: Which, I assume, are also
25 identified in the confidential attachments here.

26 DR. HILDEBRANDT: Correct.

27 CHAIRMAN DUNN: Then the answer is yes, Senator
28 Escutia.

5

1 And if you'll note, down at the very last
2 sentence of that page, it is that sentence right there that
3 started our whole route that ended up with the subpoena being
4 issued to ISO, that sentence right there.

5 SENATOR ESCUTIA: Okay.

6 CHAIRMAN DUNN: And then it got broader as we
7 discovered there was even more data available.

8 The sentence I'm referring to on the last page
9 reads:

10 "Confidential Attachment A
11 provides summary results for
12 individual suppliers
13 requested by FERC staff."

14 I want to go to Page Six. In the box on Page Six
15 you'll find several paragraphs. I'm in that last paragraph that
16 starts with, "In this study."

17 Basically in this box, Eric, you describe much of
18 what you've already described, top-down and bottom-up analyses
19 that were done.

20 I want to zero in on the sentence that starts,
21 "As shown in this report," middle of the paragraph.

22 "As shown in this report,
23 results of this more detailed
24 bottom-up approach and the
25 top-down approach used yield
26 very similar estimates of the
27 total economic impact of
28 uncompetitively high

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1 wholesale energy prices."

2 Then it goes on to say, "However, the more detailed bottom-up
3 approach" basically zeros in on very specific ones, and "excess
4 revenues earned due to uncompetitive market outcomes," et
5 cetera.

6 The fact that both the top-down and bottom-up
7 basically reached the same conclusion, a surprise? Reinforces

8 the conclusion?

9 DR. HILDEBRANDT: Not really surprised because
10 again, I mean, the top-down was ultimately initially built from
11 the bottom-up, so not a surprise. It was, you know, a
12 significant degree of calculation. But no, in fact, they should
13 pretty much add up.

14 CHAIRMAN DUNN: The reason I ask that question,
15 Eric, is as follows. Again, a lay person's here.

16 I look at it and say, you've gone top-down;
17 you've gone bottom-up. You reached basically the same
18 conclusion regarding market power and its impact here.

19 Yet, there's still an argument by some that say
20 there's been no exercise of market power in the California
21 market.

22 Upon what bases do they make that in light of the
23 fact, again, to the lay person it says, top-down, you've
24 bottomed up?

25 DR. HILDEBRANDT: I think in just taking my
26 report in isolation, it is lacking what I've characterized as
27 the third leg, which is -- and again, I've called this an
28 accounting exercise.

5

1 It really, you know, I've carefully chosen these
2 words. It's accounting for the impacts in terms of excess
3 revenues earned by each supplier due to uncompetitive market
4 outcomes.

5 It doesn't get to, you know, due to the exercise
6 of market power by individual market participants. That
7 component of our analysis was covered in Dr. Sheffrin's report.
8 You know, fundamentally, I know it exists because, I mean, when
9 you look at, you know, what people are bidding and receiving in
10 relation to costs, where do you have good cost data for

11 suppliers, it clearly supports, you know, the exercise of market
12 power, the successful exercise of market power. In other words,
13 bidding above, significantly above costs, and that affecting the
14 market clearing price significantly, both individually by
15 individual sellers, as well as collectively.

16 CHAIRMAN DUNN: Okay.

17 DR. HILDEBRANDT: So, there is a third component,
18 I think, that is key. And that was kind of the missing
19 component.

20 One of them, I tried to do it as some of the
21 missing components in my report, that we -- seem to be cited by
22 FERC. And Dr. Sheffrin addressed kind of a final one, which is,
23 gee, well, this seems to be due to market design flaws rather
24 than actual exercise of market power by market participants.

25 CHAIRMAN DUNN: And that's where Dr. Sheffrin's
26 report goes after, is to address that argument.

27 DR. HILDEBRANDT: Yes, that final one. And I
28 think that is an important kind of final, you know, leg or, you
5

1 know, you need to drill down to that level.

2 CHAIRMAN DUNN: Because we have heard in many
3 different forums here, at least in this building, I know in
4 front of the Chairwoman's committee, that that's the argument.
5 That you see these because of the flawed structure, as opposed
6 to certain behavior within the market itself.

7 DR. HILDEBRANDT: And actually, I'd like to add
8 on that. That again, I'm not a lawyer, but just the FERC
9 opinions, reading the FERC opinions themselves, they seemed to
10 reach -- even though they said, well, in their December 15th
11 Order and November Orders, after a rather extensive review of
12 the market, they said, well, we certainly found design flaws,
13 and we certainly found high prices, but we haven't been able to

14 find conclusive evidence of market power, but clearly, the
15 outcome is unjust and unreasonable.

16 So, I guess I would like to say, well,
17 Dr. Sheffrin's study is important in terms of, you know, the
18 exercise of market power. FERC's own order clearly suggests
19 that they -- well, it comes out and says they found the market
20 outcome unjust and reasonable, even absent a finding of the
21 exercise of market power by individual market participants.

22 So, I don't mean to suggest that final leg is
23 necessary to conclude that, you know, an outcome is unjust and
24 unreasonable.

25 CHAIRMAN DUNN: I just have a few wrap-up
26 questions, Eric, then I'll leave to the other members.

27 The ISO has filed a motion to intervene with
28 respect to Williams, as you are aware. Were you involved in the
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1 preparation of that at all?

2 DR. HILDEBRANDT: Yes, I helped in the
3 preparation and review.

4 CHAIRMAN DUNN: We're getting a few copies
5 delivered.

6 I know that there are attachments to this motion
7 to intervene.

8 For everybody, while we're getting copies brought
9 here, the motion to intervene, can you describe what it is?

10 DR. HILDEBRANDT: This was discussed, or the
11 concept of market-based rate authority was discussed by
12 Dr. Wolak somewhat. This is sort of the three-year anniversary
13 of the initial granting of market-based rates for the major
14 suppliers in California.

15 Williams, I believe, was the first to reach sort
16 of their three-year anniversary. They filed a pretty brief --

17 you know, request for re-authorization.

18 The ISO filed in opposition to that. We felt
19 clearly -- well, unlike three years ago, we had a lot of
20 empirical evidence now that does not support the assumptions,
21 underlying, granting of market-based rate authority. And we
22 presented a variety of those, largely drawing from some of
23 the -- my report, Dr. Sheffrin's report, and some other filings
24 we've made at FERC.

25 So really, no new analysis, but rather showing
26 FERC, look, in these previous filings, here's the supplier level
27 results, and we think it presents a strong case not to grant the
28 market-based rate authority. They'll certainly have a hearing
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1 on that.

2 CHAIRMAN DUNN: And basically the argument for
3 not granting market-based rates by ISO in that motion to
4 intervene is the belief by ISO that Williams possesses market
5 power?

6 DR. HILDEBRANDT: Correct.

7 CHAIRMAN DUNN: My understanding is, there were
8 several attachments to that motion to intervene which are held
9 in confidence, not available to the public; correct?

10 DR. HILDEBRANDT: Correct.

11 CHAIRMAN DUNN: Do you know how many attachments
12 were on that?

13 DR. HILDEBRANDT: I don't recall. Two or three,
14 I believe.

15 CHAIRMAN DUNN: And the reason that those
16 attachments are confidential, Eric, do you know?

17 DR. HILDEBRANDT: They would have supplier level.
18 In other words, just for Williams, level results by month. So,
19 I think the feeling was that it would be best to file those

20 confidentially with FERC.

21 If they were to be released later, I think the
22 ISO would have that option. Certainly, it's not the hourly
23 transaction data that's certainly encompassed in the tariff, but
24 rather, we would just supply them confidentially at this point.

25 CHAIRMAN DUNN: Understood. So basically, as I
26 understand it, and again, dragging us to lay terms, due to the
27 fact that it's market participant specific information, ISO
28 chose to file that confidentially with FERC?

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1 DR. HILDEBRANDT: Yes.

2 CHAIRMAN DUNN: And do you know -- and you may
3 not. I understand you're not a lawyer -- the route by which we,
4 this committee, could challenge that confidentiality
5 determination, or attempt to gain access to that information?

6 DR. HILDEBRANDT: Oh, I believe that would be
7 included in the scope of a subpoena.

8 CHAIRMAN DUNN: Okay, all right.

9 DR. HILDEBRANDT: It's important to note, a lot
10 of this is, it's derived from this transaction level data. So,
11 once an entity has made the proper -- or the arrangements with
12 the ISO legal staff for the raw data, a lot of the analysis then
13 is, you know, an outcome of that.

14 CHAIRMAN DUNN: All right.

15 Your two reports that we talked about today, as
16 you look back at those, any doubt about the conclusions that
17 you've reached and you've discussed? Has anything come to your
18 mind?

19 DR. HILDEBRANDT: No. They're really both kind
20 of summations or just extensions of analyses we've been doing
21 since last summer. They're just, you know, I think we're fine.
22 We have, you know, made an effort to continually factor in more

23 factors more accurately, emissions, et cetera, into our
24 analyses.

25 I think the only -- I've tried to clarify today
26 that the potential, or the costs in excess of competitive levels
27 were, I think, misrepresented in the press as, you know, alleged
28 overcharges. That certainly was not the case. If one reads the
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1 report and the filing that it was attached to, it clearly, you
2 know, again, I don't think the word overcharge is used.

3 So, I think beyond clarifying how some of the
4 filings were interpreted, I have no reservations about the
5 reports themselves.

6 CHAIRMAN DUNN: Fair to say, in fact, your
7 conclusions regarding market power are just being reinforced
8 with the ongoing work that you're doing?

9 DR. HILDEBRANDT: I believe so, yes.

10 CHAIRMAN DUNN: Have you received any response
11 from any of the market participants? You've published a number
12 of reports, most of them arguing the existence of market power.
13 I suspect some of the market participants, given the fact that
14 that's their ticket into market-based rates via FERC, would not
15 agree with the conclusions that you have reached.

16 Have you received any response?

17 DR. HILDEBRANDT: Personally I have not, no.

18 CHAIRMAN DUNN: Throughout all the work that you
19 have done, is there any data that you have not had access to
20 that you believe is important to continue your examination?

21 DR. HILDEBRANDT: Yes. I think getting actual
22 supplier cost data, for instance, the gas procurement costs, NOx
23 procurement costs, costs of individual suppliers, is important.
24 Although, I think we've used conservative assumptions about
25 those costs, using the spot market gas price, for instance.

26 I think acquisition of the data would really show
27 that, you know, to a large extent those costs might have been
28 hedged to forward purchases. And I think it would just help₆

1 support the analysis in the eyes of FERC and other entities.

2 CHAIRMAN DUNN: And the cost data is probably
3 most relevant to if, in fact, you took that next step and
4 examined the size of refunds that you might believe are in
5 order.

6 DR. HILDEBRANDT: Oh, absolutely. On the issue
7 of refunds, cost data would be critical. The whole issue of
8 refunds kind of, you know, involves concepts of equity, et
9 cetera, not as much as economic theory. So, you know, I think
10 you would start looking at average total costs and average
11 costs, and you'd want to look at the whole -- kind of the whole
12 portfolio of activities in determining the refund.

13 CHAIRMAN DUNN: Has ISO made a request for that
14 data?

15 DR. HILDEBRANDT: We have. We've asked, first of
16 all, through FERC. We've asked them to compel market
17 participants to provide cost data to the ISO as well as FERC, so
18 we could be seeing the same data. That request is pending
19 before FERC.

20 CHAIRMAN DUNN: When was it filed?

21 DR. HILDEBRANDT: It was filed, I believe, in
22 late January, so it's been a while.

23 And then we, within about a month ago, issued
24 under our market monitoring information protocols, issued a
25 similar request for the same information.

26 CHAIRMAN DUNN: To whom?

27 DR. HILDEBRANDT: To all participants selling in
28 the ISO market over the soft cap since December 8th. So, which

1 would be most of the real-time sales by non-utility entities.

2 CHAIRMAN DUNN: Any response as of yet?

3 DR. HILDEBRANDT: No. Well, I shouldn't say
4 that. A handful of smaller market participants have submitted
5 information.

6 SENATOR MORROW: Mr. Chairman, can I interrupt.

7 CHAIRMAN DUNN: Absolutely, Senator Morrow.

8 SENATOR MORROW: Has the committee made such
9 requests? Would this be included in any of the subpoenas that
10 we have?

11 CHAIRMAN DUNN: We are just refreshing our memory
12 here, Senator Morrow. We know that the bidding data was in.
13 We'll have to take a look at the document requests whether it
14 had the cost data in the original 80-some odd requests. I don't
15 recall as we're sitting here, Senator Morrow, whether the cost
16 data was requested.

17 SENATOR MORROW: I would urge that they be
18 included.

19 CHAIRMAN DUNN: Okay.

20 DR. HILDEBRANDT: I guess I'd like to qualify my
21 previous statement about, I think the cost data would show our
22 assumptions to be conservative. And I'm thinking in respect to
23 some generators, where we have better information, like a
24 thermal unit. We know a heat rate, and they run off gas. Other
25 generators, certainly cost information may indicate otherwise.
26 You know, may work the other way.

27 So, I guess I should qualify that. And then the
28 net effect of that would -- we certainly have an open mind and

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1 would factor in any and all cost information into our analyses
2 on both a system level and at an individual supplier level.

3 But we do the best we can with the data we have.

4 CHAIRMAN DUNN: Just for clarification, Senator
5 Morrow, under the subpoena, it wouldn't be there, because
6 obviously the ISO doesn't have that data as of yet.

7 I only have one question left, Senator Bowen,
8 then we'll turn it over to you.

9 You've gone through your reports for us today,
10 which was greatly appreciated.

11 Are there any current reports that are under way,
12 or any you anticipate commencing on this same issue of the
13 examination of market power in the California markets?

14 DR. HILDEBRANDT: I just -- it will be on an
15 ongoing basis, we're certainly examining market outcomes.

16 The big -- we have several -- or, we have a
17 pending we have, let's see, a request for rehearing of FERC
18 orders on refunds for January and February pending. So,
19 personally, a great portion of my time would be focused probably
20 on analysis related those rehearings.

21 CHAIRMAN DUNN: Which includes the refund
22 question.

23 DR. HILDEBRANDT: Yeah. The specific rehearings
24 only after January 1st.

25 CHAIRMAN DUNN: Which would require the cost
26 data?

27 DR. HILDEBRANDT: Correct.

28 CHAIRMAN DUNN: All right.

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1 Senator Bowen.

2 SENATOR MORROW: I'd just like to clarify again.
3 If the subpoenas only cover the items that the ISO comes into
4 possession with, have we, or does the committee intend to make a
5 request to FERC to substantiate, or basically same request in

6 support of the ISO's request?

7 CHAIRMAN DUNN: Yes, we'll be happy to do that,
8 Senator Morrow. The only place it would have been requested
9 thus far is in the document requests. Not subpoenas, but
10 document requests that were served on the generators up to this
11 point in time, which I don't recall.

12 But yes, we can absolutely make the request to
13 FERC as well.

14 Senator Bowen.

15 SENATOR BOWEN: As a follow-up on the question of
16 costs, as I was sitting here, reading one of the annual reports
17 from one of the generators, one of the things that becomes clear
18 is that -- and that we've known -- is that there is an overlap
19 with some of the generators who both sell electricity and engage
20 in trading activities with regard to both natural gas and
21 natural gas pipeline capacity.

22 So, without knowing what all of the activities
23 are with regard to natural gas and pipeline capacity, it may be
24 hard to assess any information that you get about costs, because
25 you don't know what the internal accounting procedures are.

26 For example, this annual report mentions that
27 this particular generating company hedges expected purchases of
28 fuel. But there's no way to know whether, when they're doing
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1 their cost statements, they assign only the higher spot market
2 prices to electricity generating activities.

3 And I think we may need accounting help to deal
4 with some of those issues.

5 But just requesting that data alone seems to be
6 not enough.

7 And I think it's actually one of the flaws of
8 FERC's market based authority methodology. They looked only at

9 the percentage of electrical generating capacity that a
10 particular generator had, and not at other trading activities,
11 or at natural gas, or gas pipeline capabilities.

12 Have you looked at all at some of those other
13 issues in your market power assessment? I see this big grin.

14 DR. HILDEBRANDT: Well, we have limited
15 resources, and limited expertise in the gas area.

16 We did check, find out what we could from the
17 pipeline sales as to who bought it, the information which is
18 published on the FERC web site. And, you know, there are
19 several participants. I think that indicates Williams, I
20 believe, owns a significant share.

21 The others, I guess, we quickly -- the problem we
22 quickly encountered is that gas pipeline capacity often times is
23 bought up and then resold, so that again, it's just bilateral
24 blacks hole in terms of information.

25 So again, we went -- found out what we could.
26 And I think on a going forward basis, we did note that some of
27 the major participants had bought up, on a going forward basis,
28 some capacity also.

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1 SENATOR BOWEN: Not to say there's anything wrong
2 with that. Certainly, if you both got a certain amount of
3 strategic generating capacity, and you've coupled that with
4 natural gas pipeline capacity, you have enhanced your ability to
5 charge whatever you want.

6 DR. HILDEBRANDT: Yeah. I think -- and Dr. Wolak
7 did an excellent job laying out the interconnections there, and
8 the need to take the big picture look at it.

9 And he also made the point, there's a
10 legitimate -- many legitimate business needs for integrating,
11 you know, by gas procurement.

12 SENATOR BOWEN: Sure.

13 CHAIRMAN DUNN: Senator Escutia.

14 SENATOR ESCUTIA: Thank you, Mr. Chairman.

15 I'm really coming at this from truly the
16 perspective of a lay person, since I do not sit on the Energy
17 Committee.

18 I think something that caught my attention was
19 something that Dr. Hildebrandt mentioned about these costs being
20 hedged to forward purchases.

21 I think that perhaps -- obviously, I think one of
22 the goals of this committee is to try to determine what happens
23 in terms of a bidding strategy? And what is it that is factored
24 in?

25 I know that you looked at individual bidding
26 behavior in your analysis. And it seems to me that perhaps
27 there's reason to believe that this bidding behavior, the people
28 who are bidding tend to feed off of each other, and it kind of

1 seems to set off a bidding frenzy.

2 Can you draw any conclusions or comment on
3 whether this is the way they actually operate in terms of these
4 bids work off of each other? It's obvious that just one person
5 alone, one supplier alone, cannot supply the market.

6 I guess maybe the question I'm asking you is one,
7 perhaps, a qualitative conclusion as to perhaps what is going on
8 in this marketplace.

9 Since one person alone cannot supply the entire
10 market, are all these bidding strategies kind of placed on the
11 market ahead of time in order to drive up the costs?

12 DR. HILDEBRANDT: I think I'd like to defer your
13 question to Dr. Sheffrin.

14 SENATOR ESCUTIA: All right. Then let me ask you

15 another thing.

16 Your study did tell us that we ended up paying
17 more for power during a Stage 2 than during a Stage 3. Is that
18 just an overreaction on the part of the buyers, that they're
19 just afraid of getting to the spot market? Or, have the
20 generators simply got sophisticated enough to manipulate the
21 market?

22 DR. HILDEBRANDT: You're referring to Table 2-3.
23 Yeah, I would say that's largely statistical variance, the
24 difference there. The \$400 average wholesale price during Stage
25 2, and a \$372 price during Stage 3.

26 Market prices bop around. And part of it has to
27 do with, we had different price cap levels. So, if we had --
28 you know the price cap went down from 750 to 500 to 250, so if
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1 we had more Stage 2s early in the summer, we would have a higher
2 price there. And as we got in the summer, we had more Stage 3s,
3 but we only had a \$250 price cap, that limited some of the
4 prices.

5 So, I think it's partly statistical. We were
6 probably virtually hitting the price cap almost all those hours,
7 and the difference was, the price cap was limited at different
8 levels.

9 SENATOR ESCUTIA: Well then, Mr. Chairman, in
10 fact, it seems like we have to gather this information to
11 determine what is it that factors into a bidding strategy. It
12 seems a lot of this information is confidential.

13 I'm just wondering how is it that we're going to
14 be able to perhaps pierce that confidentiality veil in order for
15 us to determine, in fact, what factors went into a certain
16 bidding strategy, and what was the result of that bidding
17 strategy.

18 I think to me, I think anyone can conclude that
19 if only demand increased by, what, 4 percent, you know, from '99
20 to 2000, and yet the price that we paid was over 266 percent, I
21 mean, you know, is the classic issue of res ipsa loquitur, the
22 thing speaks for itself, and we can't identify the actual
23 culprit, but something actually went wrong?

24 I'm just getting very concerned that in response
25 to our subpoena, that we try to get as much information as
26 possible, because otherwise, you know, I think we're going to
27 perhaps spin our wheels, since nobody really is coming here
28 outright concluding that there was some type of, I don't know,

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1 collusion, or some type of illegal behavior in the marketplace
2 pursuant to these bidding strategies.

3 I'm getting a bit concerned here as to the
4 information that we are requesting, and also, just as a lay
5 person, I'd like to see, frankly, I'd like to see how this
6 market operates. What are these strategies that people are
7 talking about? What is it that goes into it? And then, what's
8 the result of it?

9 CHAIRMAN DUNN: Understood, Senator Escutia. Let
10 me make a couple comments, if I may.

11 That very last point, in fact, our next witness,
12 right after we take a 10-minute break for Evelyn, is going to be
13 Dr. Sheffrin. And the title of her report is, "Empirical
14 Evidence of Strategic Bidding." That's going to zero right in
15 on that question.

16 Her report, you'll find, much of the very
17 specific identification data is in confidence, held
18 confidentially. That's one of the reasons that we served the
19 subpoena on the ISO, to start that process, to gain access to
20 some of the that data, and to allow whomever may be raising

21 confidentiality objections to do so in whatever forum is
22 appropriate, so that we can test them to determine whether, in
23 fact, this investigation committee is going to be allowed access
24 to that information.

25 Because I think, Senator Escutia, you are
26 absolutely correct. There seems to be a fairly commonly held
27 opinion, other than by various market participants, that there
28 has been, is now, and will probably continue to be, an exercise

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1 of market power in this market.

2 But as Senator Morrow pointed out in our first
3 hearing, that stand alone does not indicate any illegal or
4 inappropriate activity, other than as it relates to the ticket
5 into market-based regulation, which is the lack of market power.
6 But doesn't necessarily indicate collusive activity, as we've
7 discussed.

8 But we want to make sure we examine what's out
9 there, because we may find ourselves in a position of being the
10 first body to weigh into actually assessing whether, in fact,
11 there is collusive activity, and how in fact do we determine
12 that.

13 SENATOR ESCUTIA: Right, but I know that several
14 members have indicated that greed not illegal. And perhaps I
15 can understand that, greed is not illegal.

16 But doesn't the Federal Power Act and doesn't
17 FERC say that the price that has to be charged is one that is
18 just, fair, and reasonable?

19 CHAIRMAN DUNN: Most definitely.

20 SENATOR ESCUTIA: I think I asked this question
21 the first hearing. If I can somehow get some kind of definition
22 or factors as to what defines just, fair, and reasonable, I
23 think it would help me, the lay person, understand that the

24 prices that were charged on the market were not just, fair, and
25 reasonable.

26 CHAIRMAN DUNN: Yes.

27 Eric, if I can drag you into this discussion for
28 a second, if I heard your testimony correctly, it would be your
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1 opinion that FERC's conclusion of unjust and unreasonable prices
2 in December really must be premised on prices that were
3 generated as a result of the exercise of market power, even
4 though they do not say that?

5 DR. HILDEBRANDT: Correct.

6 CHAIRMAN DUNN: In fact, if I heard you correct,
7 you questioned how they could reach the conclusion of unjust and
8 unreasonable without finding in fact that there was an exercise
9 of market power.

10 DR. HILDEBRANDT: No. The point I was trying to
11 make is that they need not, in reading their own order, and the
12 filings of some other entities, they need not find actual market
13 power to find that results were unjust and unreasonable.

14 They suggest other places in their order that
15 they seem to need to find the exercise of market power to order
16 refunds or take different action. But I think that threshold
17 also can be met. Clearly, there's a finding of market power,
18 although it's not necessary for a finding of unjust and
19 unreasonable.

20 SENATOR ESCUTIA: Well then, I have one last
21 question, if I may, Mr. Chairman.

22 You indicated, Dr. Hildebrandt, in your opening
23 statement that your study did observe the exercise of market
24 power.

25 And you also indicated that we need strong market
26 mitigation. Your report says that.

27 "Since additions of new
28 supply are likely to merely

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1 keep pace with, or even fall
2 short of demand growth over
3 the next two years, the
4 exercise of significant
5 market power can be expected
6 to continue, if not worsen,
7 over the next two years,
8 absent action to more
9 effectively mitigate
10 system-wide market power. "

11 Do you have some ideas as to how we can mitigate?

12 DR. HILDEBRANDT: The ISO filed a proposed -- I
13 think it was called a market stabilization plan, but in that had
14 a hefty market power mitigation approach. And as I recall, the
15 approach there was to mitigate, or limit, what suppliers could
16 bid into the market, and tie that to their costs.

17 SENATOR ESCUTIA: Obviously that hasn't worked,
18 because once you account even for cost, the prices still
19 obviously go beyond that.

20 DR. HILDEBRANDT: No, because that plan's not in
21 effect. That was just a plan submitted and not -- although I
22 haven't read yesterday's plan in detail, I don't think it
23 adopted the proposed market power mitigation approach by the
24 ISO, or it's limited.

25 So, yeah, I mean, the ISO has been proactive in
26 proposing different market power mitigation options to the FERC.

27 SENATOR ESCUTIA: Like what? What are mitigation
28 market options?

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1 DR. HILDEBRANDT: Well, last fall, back in
2 October, the ISO filed a proposed settlement agreement. The
3 concept was that a significant portion of capacity would be put
4 under contract to demand. You'd have bilateral contracts,
5 long-term contracts, or two years in duration, roughly, to get
6 us through this period. But that you needed somehow to have
7 FERC-sanctioned contracts between buyers and sellers under
8 current market conditions. That was the only way sellers were
9 going to get a just and reasonable rate for a large portion of
10 their demand.

11 We suggested that each supplier be required to
12 contract 70 percent of their capacity. The remainder would then
13 remain for sale in a real-time market, spot market.

14 From the buyers' perspective, the suggested
15 forward contracting requirement would cover, I think, 90 percent
16 of their demand. When you added utility-owned generation with
17 what they would get at a fair and reasonable rate under the
18 auspices of FERC, they would buy the rest on the spot market.
19 The price, you know, may go relatively high in that market, but
20 that would only be for a small portion of their demand.

21 So, we thought that was one way -- just sort of
22 -- everybody seems to agree that long-term contracts with a
23 relatively small spot market is the way to go. We thought,
24 well, the only way we're going to get that in the next two years
25 is if FERC steps in and kind of referees, you know, the price of
26 a contract between buyers and sellers.

27 That option was not accepted. And then more
28 recently, we submitted, since that option was out, more of a bid

1 cap, a resource-based bid cap approach, but cost-based, applying
2 all hours to all resources. And that -- the bottom line there
3 is, it would in effect, if adopted and not circumvented, it

4 would, in effect, replicate a competitive market you'd have in a
5 single-price auction. You'd have people bidding based on their
6 costs. The highest cost bidder accepted setting the price, and
7 you would, in effect, simulate the, you know, the competitive
8 market outcome.

9 So, that was the second kind of option that the
10 ISO, you know, extensive proposals, proposed.

11 SENATOR ESCUTIA: Thank you.

12 CHAIRMAN DUNN: Doctor, thank you very much.

13 Unless there's any other follow-up questions,
14 Evelyn, a 10-minute break for you.

15 [Thereupon a brief recess
16 was taken.]

17 CHAIRMAN DUNN: Why don't we get going.
18 Dr. Sheffrin, why don't you come on up.

19 Bill, if I can interrupt you for one second, I
20 have a question to pose to you and to Senator Bowen.

21 We're at that critical juncture again, which is,
22 we can either have the State Auditor today, they're on call, or
23 we can push them over to another day.

24 I suspect Dr. Sheffrin will go about an hour,
25 just a rough guess.

26 SENATOR BOWEN: Is that a kilowatt hour?

27 CHAIRMAN DUNN: Which brings us close to 5:00.

28 My own recommendation is that we defer the State
7

1 Auditor to a different day. Any objection?

2 SENATOR BOWEN: Sold.

3 CHAIRMAN DUNN: Ronda, you know what to do.

4 JudyAnne, if you would, do your services.

5 [Thereupon the witness,

6 ANJALI SHEFFRIN, swore to

2ENERGY.TXT

7 tell the truth, the whole
8 truth, and nothing but the
9 truth.]

10 CHAIRMAN DUNN: Good afternoon, Dr. Sheffrin.
11 Thank you for your patience up to now. Hopefully, you'll
12 exercise some more of it during your testimony.

13 As with Dr. Hildebrandt, can you give us a little
14 bit about your background and also your position with the ISO?

15 DR. SHEFFRIN: Yes. My name is Anjali Sheffrin.
16 I'm Director of Market Analysis at the California ISO. I have
17 been in this position since August of 1996, so prior to the
18 start of the market I was involved. I joined the ISO prior to
19 the start of the market.

20 I was involved in setting up the whole market
21 surveillance activities at the ISO.

22 CHAIRMAN DUNN: Can everybody hear now? Try it.
23 [Thereupon, the Sergeant-
24 at-Arms replaced the
25 microphone.]

26 CHAIRMAN DUNN: Doctor, why don't you begin
27 again with your background and your history at the ISO.

28 DR. SHEFFRIN: My position at the ISO is Director
7

1 of Market Analysis. I joined the ISO in August of 1997. That
2 was prior to the start of the market.

3 My responsibility was to set up the entire
4 surveillance activities and get them in place before the market
5 started so we had a monitoring activity.

6 Prior to joining the ISO, I worked for 15 years
7 at the Sacramento Municipal Utility District. I was their
8 Manager of Resource Planning.

9 Prior to that, I worked as a senior economist at
Page 71

10 the Potomac Electric Power Company in Washington, D.C., and I
11 received my Ph.D. in economics from the University of California
12 at Davis.

13 CHAIRMAN DUNN: All right.

14 What we're going to do, Dr. Sheffrin, is just
15 zero right in on the report that was prepared by you, dated
16 March 21st, 2001, which I think, Donna is Number One, and Tab
17 One in the binders.

18 If I may, Doctor, let me do exactly what I did
19 with Dr. Hildebrandt. If you could, give us some overall
20 comments about this particular report, entitled, "Empirical
21 Evidence of Strategic Bidding in California ISO Real-time
22 Market."

23 Give us a general overview, and then I want to
24 drag you into a little bit of detail relating to that report.

25 DR. SHEFFRIN: As an introduction, I'd like put
26 it in context.

27 Just as Professor Wolak and Dr. Hildebrandt
28 explained to you, they had both done studies of how much market

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1 power has been exercised, and the impacts of that on the overall
2 market.

3 As we filed report after report at FERC, they
4 seemed to indicate that, yes, there were some problems in the
5 market, allowing market power to be exercised, but it could have
6 been for any set of reasons. It might be just that the market
7 was designed in a bad way. It just might be that conditions are
8 very tight, and so, high prices are a good thing, or a good
9 signal to have.

10 What I tried to do is fill the record with
11 information to say, no, prices don't happen by themselves. They
12 happen as a result of specific bidding behavior by suppliers in

13 the market. So, in fact, you can take a look at individual
14 suppliers' bidding behavior and see if they're acting in a
15 competitive manner as a price taker, or they're acting in a
16 strategic manner and actually setting prices.

17 Again, our purpose was to show on a going forward
18 basis, suppliers did have market power, and that was
19 inconsistent with FERC's sort of responsibility to guarantee
20 just and reasonable rates. They have used markets as a proxy
21 for just and reasonable rates on the condition that sellers
22 don't have market power; they can't influence the price through
23 their bidding behavior, and therefore, the outcome should be
24 competitive, and just and reasonable.

25 We tried to file this report to say that's flawed
26 logic. In fact, the sellers do have market power. And in fact,
27 the outcome in the market is not just and reasonable.

28 CHAIRMAN DUNN: Can you go into your report a ⁸

1 little bit, and some of your conclusions and so forth, as I
2 said, in a general way? Then we'll get to more specifics.

3 DR. SHEFFRIN: Sure.

4 So, we tried to answer the question, are
5 individual suppliers responsible for the observed market power?
6 And the answer that we came up with is, yes. And it was not
7 simply flawed market design, or any of those other factors that
8 people put out, you know, as possible reasons.

9 We examined the bidding behavior of suppliers in
10 the real-time market, and that's only a small portion of the
11 entire market, and a small portion of the impacts that
12 Dr. Hildebrandt and Professor Wolak talked about, but it's a
13 critical portion because it is the last market in which
14 suppliers can sell; therefore, it does tend to set expectations
15 as to, well, if I don't sell and hold out for the real time,

16 this is what I'm able to earn as that last prospect.

17 SENATOR BOWEN: Is the logical implication of
18 that, that in a situation where there's market power, more
19 sellers will hold out to be able to sell in the real-time market
20 if they think there's no risk that they won't be able to sell?

21 Or, given the number of times where they will be
22 able to sell, the higher prices during those periods will be
23 more profitable than if they sold more of their energy in
24 day-ahead, hour-ahead, and other forward markets?

25 DR. SHEFFRIN: Yes, that is one of the
26 implications of the study.

27 SENATOR BOWEN: That was an awful question, I'm
28 sorry.

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1 DR. SHEFFRIN: One of the things that we had
2 noticed in this market is, both buyers and sellers were ending
3 up in real-time to transact business. That was not good from a
4 reliability perspective of the ISO, who's having to match demand
5 and supply every second. Every ten minutes, but, you know, we
6 get violations if we don't do that, our WFCC violations.

7 So, it's really critical for us to know what
8 demand and supply will be served ahead of time, and hopefully,
9 only a small portion will have to be done in real time.

10 We found ourselves scrambling tremendously just
11 to maintain the reliability of the system because of the
12 volume. And one of the ways that was happening is, suppliers
13 were understanding that, you know, they could get a higher
14 price. They could influence the price in the real time.

15 SENATOR BOWEN: So, to try to summarize that in
16 lay terms, if you have suppliers who believe they can earn more
17 money in real-time, you will find a great deal of the load being
18 served in real-time. And that's what you believe is happening?

19 DR. SHEFFRIN: Yes. It's a combination of both
20 load and supply not being able to agree on a price ahead of
21 time, and therefore showing up in real-time.

22 We studied the bidding behavior of five in-state
23 suppliers, and for those suppliers, as Dr. Hildebrandt
24 explained, we had quite a bit of data. We have their, you know,
25 what they're capable of producing because we have metered data
26 of how much they've ever produced out of those power plants
27 during the whole time of operation. We have their heat rates,
28 what it cost to produce a kilowatt hour, just using market

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1 available information, like gas prices.

2 Again, as he explained, their actual costs may be
3 far below that, because most of them do hedge their purchases,
4 but even giving them the benefit of the doubt of the highest
5 cost, purchasing everything on the spot market, what would the
6 cost of production have been? We compared that to the prices
7 they bid into the market, and we found that what they bid is
8 very excessive above the cost.

9 SENATOR BOWEN: I know we've tossed around the
10 term "heat rate" a number of times. Could you give us the lay
11 person's primer what a heat rate is, and tell us why we care?

12 DR. SHEFFRIN: Heat rate is a unit of gas that is
13 fed into the power plant and produces a unit of electricity.
14 So, it's typically given in the units of mm btu of gas producing
15 electricity.

16 SENATOR BOWEN: So, what does that tell us? What
17 does knowing the heat rate tell us about a particular power
18 plant?

19 DR. SHEFFRIN: Again, we're trying to see how
20 they bid into the market and --

21 SENATOR BOWEN: I want you to be much more

22 elementary than that.

23 CHAIRMAN DUNN: We're first graders here.

24 SENATOR BOWEN: That's right.

25 If you have a higher or lower heat rates, what
26 does that mean for costs or for other considerations?

27 DR. SHEFFRIN: Okay.

28 Just to get an idea, the traditional example was,
8

1 if gas is \$3, and your heat rate is 10,000, then you multiply
2 10,000 times 3, and you get unit which is referred to as \$30 per
3 megawatt hour. That is one of the costs of production, the
4 primarily large cost of producing electricity if you have a
5 thermal power plant. So, that's a basic input.

6 And you want to account for all the cost elements
7 of the cost of production, and see if suppliers' bidding
8 behavior is reflective of their costs. If they were a price
9 taker, it would be. That would be the way that they would maximize
10 profits.

11 SENATOR BOWEN: So you would expect to see, then,
12 some relationship between the heat rate of a particular plant
13 and the marginal costs that you would expect to see reflected in
14 a bid?

15 DR. SHEFFRIN: Right. Heat rate is one input
16 variable. O and M is another variable, operations and
17 maintenance costs, referred to as variable O&M

18 And then fuel, variable O&M, emissions costs, all
19 of those costs that vary with the amount of production that you
20 have.

21 So, we had a lot of information on in-state
22 suppliers for import. So, we did our study initially on
23 in-state suppliers.

24 We presented those results to FERC. I presented

25 them on January 24th in a private confidential meeting to let
26 them know that we were concerned that they keep coming out with
27 the conclusion, oh well, it's market power, but there's nothing
28 you can do about it. We felt strongly there was something they

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1 could do about it.

2 They responded back that they would like a study
3 which was more complete and that included a study of importers,
4 so we -- prior to our filing the study results with FERC.

5 So, we went back and studied 16 large importers.
6 We didn't have the time to go collect the specific costs on
7 those importers. And again, importers are defined as imports
8 into the ISO control area, so they can be in-state generation,
9 but just not part of the ISO control area, as well as
10 out-of-state and out of country.

11 CHAIRMAN DUNN: Is there an example of one of
12 those in-state but out of ISO territory? Just an example for
13 us?

14 DR. SHEFFRIN: LADWP is in-state. WAPA, Western
15 Area Power Administration is not part of the control area but
16 have some plants in-state. Bonneville Power Authority is out of
17 the state, and then Power X, all of those. You know, a whole
18 host of suppliers in the west supply into the California market.

19 CHAIRMAN DUNN: I didn't mean to interrupt,
20 Senator Bowen. Go ahead.

21 DR. SHEFFRIN: On those importers, we used some
22 simplifying assumptions on cost. We used a 12,000 heat rate,
23 which we felt was reflective of average cost of most of the
24 supply out there, times the fuel price in the region that they
25 would have been supplying into the ISO control grid.

26 And, you know, with that, we tried to do our best
27 accounting of cost. Again, we have asked people to submit to

28 us information if we've gotten those costs wrong, and we're 8

1 happy to do the study. But I'm fairly confident that on average
2 we've got a good sense of the costs out there.

3 CHAIRMAN DUNN: Any further general comments on
4 the report, Doctor?

5 DR. SHEFFRIN: Just, I think, and as Commissioner
6 Massey at FERC has said, we hope that this does provide the
7 compelling evidence that prices just don't happen to be high.
8 That suppliers actively bid to produce those high prices in the
9 market.

10 CHAIRMAN DUNN: Okay. Are you ready to go into
11 some detail?

12 DR. SHEFFRIN: I am.

13 CHAIRMAN DUNN: Donna, if you already have that
14 up, I want to go to Page Two of Dr. Sheffrin's report. I want
15 to start in that very first paragraph, Donna, about two-thirds
16 of the way down there's a sentence that begins, "Previously,
17 regulators, including the FERC"

18 Dr. Sheffrin, it says.

19 "Previously, regulators,
20 including the FERC, have
21 found strong evidence of
22 the exercise of market.
23 power in the prices
24 prevailing in the ISO and
25 Power Exchange markets, but
26 have been unable to identify
27 evidence that any individual
28 supplier in the California

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1 market exercised market power

2 to create those prices. This
3 report reveals the linkage
4 between individual suppliers'
5 bidding behavior and market
6 prices by examining information
7 available "

8 et cetera, then it relates to them

9 As we talked with Dr. Hildebrandt, basically what
10 this does is, because FERC was saying, well, we're missing some
11 of the components what you, the ISO, is saying to us, show us
12 the data re: individual market participants and their impact on
13 market power; correct?

14 DR. SHEFFRIN: Yes. You know, FERC didn't say,
15 show us. We said, you seem to fail to find any evidence of any
16 individual supplier; let us show you.

17 CHAIRMAN DUNN: There you go.

18 The one thing up until now, at least my
19 recollection of the testimony of Dr. Wolak and
20 Dr. Hildebrandt was, that FERC, although they concluded unjust
21 and unreasonable in December, they have not as of yet stated, at
22 least to my knowledge, that they have found the existence of
23 market power.

24 Am I incorrect in that? And the reason I'm
25 asking, Dr. Sheffrin, is in that sentence that's up there, it
26 says, "Previously, regulators, including FERC, have found strong
27 evidence of the exercise of market power. "

28 I'm just curious where we have indications that
8

1 FERC has reached that conclusion?

2 DR. SHEFFRIN: In the footnote what I refer to
3 as, they did not find evidence identifying individual suppliers
4 exercising market power.

5 I'm not exactly clear whether they've had any
6 statements on the overall exercise of market power.

7 CHAIRMAN DUNN: Okay, that was going to be my
8 question.

9 In Footnote Three, if we can bring that one up,
10 Donna, it states in that first sentence:

11 "... [the] FERC proposed order, "

12 it says:

13 "and the accompanying staff
14 report contained a finding
15 that the ISO and PX
16 electricity markets were not
17 workably competitive. "

18 DR. SHEFFRIN: Right.

19 CHAIRMAN DUNN: Do you interpret that as
20 suggesting the existence of market power?

21 DR. SHEFFRIN: It's the flip side of the coin.
22 If you don't have a workably competitive market, you must have
23 the exercise of market power, in my opinion.

24 CHAIRMAN DUNN: Let me go to the last sentence of
25 that footnote that you just put up there, Donna. It says:

26 "Then, in FERC's February 1,
27 2001 Report on Plant Outages, "

28 which we've had some discussion about here in California,

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1 "the agency again concluded
2 that it had not found
3 evidence that the outages
4 examined were the result of
5 market manipulation or any
6 form of market power abuse. "

7 Dr. Sheffrin, are you familiar with that report

8 by FERC at all?

9 DR. SHEFFRIN: Just generally, not the real
10 specifics. Actually, it would have been Dr. Hildebrandt that
11 worked most closely. I'm sorry.

12 CHAIRMAN DUNN: I missed that line of
13 questioning.

14 DR. SHEFFRIN: We're a tag team

15 CHAIRMAN DUNN: Do you have any idea how they
16 conducted that study?

17 DR. SHEFFRIN: I believe that they -- again, I
18 would be guessing, but I know that they made some site visits,
19 and I think that they did try to do some correlation of outages
20 with prices. That's how they might have reached -- but again,
21 I'm not definitive witness on that.

22 CHAIRMAN DUNN: I understand. You don't have any
23 opinion as to whether it was an adequately done examination or
24 not?

25 DR. SHEFFRIN: Not at this time.

26 CHAIRMAN DUNN: All right.

27 I want to go back up to Footnote Number Two. It
28 says:

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1 "This study reviewed
2 bidding activities from
3 the five large in-state
4 non-investor owned utility
5 suppliers and 16 importers
6 in the real-time market CA
7 ISO for each hour between
8 May and November of 2000. "

9 I don't want you to get in trouble with your
10 confidentiality agreement, but can you identify the "five large

11 in-state non-investor owned utility suppliers" that are
12 referenced in that footnote?

13 DR. SHEFFRIN: I think that they're pretty
14 generally known who they are.

15 CHAIRMAN DUNN: Again, I don't want you to
16 violate any confidentiality provisions. We're going to be
17 probing those in the coming weeks.

18 DR. SHEFFRIN: Right. I think I'll just leave it
19 to when you ask us for the confidential data, we'll reveal the
20 names to you, just to be perfectly, you know, safe.

21 CHAIRMAN DUNN: There's nobody on this committee
22 that wants to get you into trouble. We may drag you back here
23 later on, and question you about that confidential data.

24 I assume the same applies to the 16 importers
25 that are referenced in that paragraph as well?

26 DR. SHEFFRIN: Yes.

27 CHAIRMAN DUNN: You mentioned that this study
28 reviewed bidding activities. Can you describe for us generally,
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1 when you say "bidding activities," what data did you look at?

2 DR. SHEFFRIN: We looked at their hourly bids.
3 So, for the five in-state suppliers, we looked at, I think,
4 something like 25,000 hourly bidding profiles.

5 So, we look at their bid curve. We look at how
6 much they have scheduled through bilateral transactions,
7 whatever. These in-state suppliers all have to schedule their
8 total output with the ISO, even if they've made a bilateral
9 agreement. They still need to use the transmission lines and
10 need to make sure that their power can flow, so they schedule
11 all of that with us.

12 So, we looked at the total amount that they had
13 scheduled and total amount that they had bid into any of the

14 ISO's markets. And then we also know the available capacity, so
15 we did an examination of, given the output that they were
16 producing, what should have been the cost in their portfolio to
17 produce, and compared that cost to their individual bid in every
18 hour, and looked at the entire bidding profile.

19 CHAIRMAN DUNN: Doctor, I know you do this for a
20 profession, but was that a fairly daunting task to examine that
21 bidding data for those five?

22 DR. SHEFFRIN: It was a lot of work, because bids
23 come in in all different markets. And just to try to get one
24 picture of that entire activity was difficult, but we felt we
25 had to do it in order to examine how it is that they were
26 bidding, and account for all of their sources of supply so they
27 couldn't say, well, you just missed this, and so, no wonder you
28 found such-and-such activity.

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1 CHAIRMAN DUNN: Beginning to end, how long did
2 the process take to review that bidding data for this target
3 area?

4 DR. SHEFFRIN: There are a lot of steps involved.
5 First, you have to just accumulate massive amounts of data.
6 Then you have to structure it in a way that you know can be
7 analyzed. Then we had to develop some bidding indices.

8 But first we started with just looking at graphs
9 of their bid, hour by hour. But, you know, you start getting
10 cross-eyed if you look at too many of those.

11 Then we started building statistics to give us,
12 and what I describe in my report as, then classifying different
13 bidding patterns.

14 So, we did all of that. I guess the work would
15 have been from December to March.

16 CHAIRMAN DUNN: And to do that, was it a certain

17 modeling process that you approached that's within your
18 profession, or did you have to do this basically from ground
19 zero? Do you understand my question?

20 DR. SHEFFRIN: It was an application, obviously,
21 of economic theory, but it had to be applied in this particular
22 case, how do you take a look at bidding behavior?

23 Like I said, up to now, people were just taking a
24 look at market clearing prices, and what should have been the
25 competitive base-line cost through a modeling approach.

26 I wanted to delve into actual bidding behavior
27 and a study of bidding patterns, so it took a lot more work.

28 CHAIRMAN DUNN: So, we're moving from a

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1 quasi-macro to a micro level at this point?

2 DR. SHEFFRIN: Exactly.

3 CHAIRMAN DUNN: Same footnote. Why the time
4 period between May and November of 2000? Why did you select
5 that time period?

6 DR. SHEFFRIN: That was the time period in which
7 what is called the uniform market clearing price mechanism was
8 the way prices got set in the market. So, it's -- the highest
9 cost bid accepted sets the price for everyone.

10 In that market, it's very difficult to say who
11 was responsible for setting high prices. So, that's why we
12 delved into this question. Since then, it's, in essence, gone
13 to an as-bid market; you're paid whatever you're bid. And that
14 is much easier to then study the relationship between your bid
15 and your cost, and you don't have an impact as a result of
16 bidding high on anybody else.

17 But under the uniform market clearing price, you
18 do have that indirect impact. So, you know, you could have been
19 supplying all your capacity and bidding it very low, but because

20 somebody else exercised market power, you were the beneficiary
21 of that market clearing price that was inflated. That's what we
22 called windfall profits.

23 So, this, in essence, exercised -- tried to take
24 a look at the total excess above competitive levels, and tried
25 to break it out into how much did your own bidding behavior help
26 set a high market clearing price. That's what we called
27 monopoly rents. And how much, you know, was it just a free ride
28 that you got because somebody else did, and that's the part that
9

1 we called windfall profits.

2 CHAIRMAN DUNN: Doctor, not to suggest that
3 anything in your profession is easy, but if I heard you correct,
4 that since we've moved into an as-bid situation, that it might
5 actually be easier now to do the same examination here, but for
6 the time period of, say, December through today?

7 DR. SHEFFRIN: It'll be more direct, right.

8 CHAIRMAN DUNN: Are you doing that at all,
9 following up this study with an identical examination, but for
10 the time period after that identified in this report?

11 DR. SHEFFRIN: I haven't had the chance to, but I
12 believe in some of the studies Dr. Hildebrandt has done, it
13 essentially follows through that methodology.

14 CHAIRMAN DUNN: If we could go to Page Three.

15 I realize that some of this, you've already
16 identified in your general comments, Doctor. I just want to
17 follow-up on it.

18 It says, about halfway through that first
19 paragraph, and then we'll go to the bullet points, Donna:

20 "The analysis also attributed
21 the overall increase in
22 prices from May to November

23 into component factors:
24 (a) increases in the cost of
25 production (b) increases
26 attributable to high prices
27 during hours of scarcity, and
28 (c) the remainder of the

9

1 increase where market power
2 alone resulted in prices
3 above what would be expected
4 in a competitive market. The
5 findings were"

6 I'm not going to go through them all, just mention them there.

7 Do you have any question about your conclusions
8 now? Do they still stand? Have they been reinforced with
9 anything you've seen since the time that you published this
10 report?

11 DR. SHEFFRIN: Let me answer two issues.

12 One, the paragraph that you just read applies to
13 the study that Dr. Hildebrandt and Professor Wolak did.

14 CHAIRMAN DUNN: Late last year.

15 DR. SHEFFRIN: Right, so I just want to make
16 sure, that was sort of the preamble to my study. And I'm
17 confident that that's a good methodology. It's been used by a
18 number of prominent economists looking at this market. So, I'm
19 confident that that's a good way to approach this.

20 CHAIRMAN DUNN: And the same thing, last
21 paragraph, Donna, in there, the last sentence. It says:

22 "In this study of individual
23 suppliers' bidding behavior,
24 there was direct evidence
25 that many of the suppliers

26 used bidding strategies that
27 resulted in market clearing
28 prices above competitive

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1 levels ..."

2 et cetera, et cetera.

3 Basically the conclusion?

4 DR. SHEFFRIN: Yes, I agree with that.

5 CHAIRMAN DUNN: All right.

6 Let's go to the next page, Page Four. It's
7 entitled, "Study of Individual Suppliers' Bidding Behavior."
8 The paragraph starts, "Two forms of withholding"

9 Can you explain those to us?

10 DR. SHEFFRIN: Yes.

11 Remember, exercising market power is the ability
12 of a firm to raise prices above competitive levels. It's not
13 rocket science. It's pretty easy. That's what the DOJ uses as a
14 definition. That's what the Federal Trade Commission uses as a
15 definition. That's what we use as the definition of market
16 power.

17 The question is, how do they do that? That's the
18 million dollar question. Not, how do you get exercise of market
19 power, but how do they do that.

20 And suppliers essentially can do it in two forms.
21 One is withholding part of their capacity from the market, not
22 bidding in the total amount. So, what happens when you withhold
23 a portion of your resources is, you force other resources, more
24 expensive resources, to have to supply the load, and a higher
25 market clearing price gets set. So, the outcome then for the
26 market is, higher prices for an output which is really reduced
27 because, really, more should have been offered. That's
28 physical withholding.

1 The second way that firms can act to raise prices
2 is just through their bidding behavior, and bidding --
3 submitting bids at prices significantly above their marginal
4 cost of production. And when demand is high, and it's very
5 inelastic, you know, we don't have price responsive demand to
6 say, no way, I'm not going to pay those prices. Then suppliers
7 are fairly confident that the bids they submit into the market
8 have to be accepted, and they set the market clearing price.

9 So, those are the two ways in which you then
10 exercise market power.

11 CHAIRMAN DUNN: Senator Bowen.

12 SENATOR BOWEN: I would like to explore that a
13 little more as a concept and see if we can do the second grade
14 version of it, instead of the first grade version.

15 DR. SHEFFRIN: Sure.

16 SENATOR BOWEN: We've spent some time around here
17 recently talking to some of the California businesses about
18 reliability, and about their concerns about reliability.

19 Just as one example, someone said to me, well, if
20 I'm in the middle -- I run a bio-tech lab. And if I'm in the
21 middle of an experiment, and the prices for electricity to run
22 the lab, and keep the temperature constant, and maintain
23 sterility, if that's a factor, if prices go from three cents a
24 kilowatt hour to even \$3 a kilowatt hour, I just have to pay for
25 it, because the economic loss to me would be far greater than
26 the \$2.97 that I'm going to pay more than what the market would
27 have set.

28 Is that the kind of situation you were describing
9

1 when you say that people can bid in and set higher and higher
2 prices without that kind of response, that just says, well, you

3 know, I'll eat Wheaties today instead of Corn Flakes if Corn
4 Flakes are that much?

5 DR. SHEFFRIN: You know, there are two critical
6 ways to mitigate market power.

7 One is just make sure sellers don't have that
8 ability to influence it and set it so high.

9 The second is, demand just being able to say no
10 if they had enough advance warning.

11 So, demand -- you know, price responsive demand
12 is very critical to helping control costs and controlling market
13 power.

14 SENATOR BOWEN: One of the problems with our
15 market then, is, we don't have a ready way for most people to
16 see what the current cost of electricity is.

17 DR. SHEFFRIN: I believe that a big effort, I
18 believe, by the Governor's Office has been to pay for real-time
19 meters and get the current existing hourly meters, so that
20 people will begin to see real-time prices. I think there's a
21 really innovative way to not penalize people, but give them an
22 opportunity to save.

23 I think the design is, you get last year's
24 consumption. If you go above that, you face the real-time
25 price. If you in fact can save below that, you get a credit of
26 the real-time price.

27 SENATOR BOWEN: But even real-time metering
28 doesn't solve the problem of my bio-tech lab that will lose a
9

1 thousand times in value whatever the increased cost is; right?

2 DR. SHEFFRIN: Right. I think there, you know,
3 one way to help alleviate that person's problem is, if they had
4 a forecast of the next day's price, then they could say, you
5 know what? This is not the right day to start that experiment.

6 I'm going to hold off until next week. That would help them

7 SENATOR BOWEN: Although, if you're doing an
8 experiment that involves several months of lab time.

9 DR. SHEFFRIN: Right, no, then that is the, you
10 know, demand can't say no because they have so much invested.

11 SENATOR BOWEN: Is electricity different in that
12 way from most of the other inputs in our theoretical bio-tech
13 lab?

14 I assume that you can get a big stack of petri
15 dishes if you think that the price of petri dishes is going to
16 go up and stick them in a warehouse.

17 DR. SHEFFRIN: Right. Electricity's very
18 difficult to store. There are ways to store it, such as battery
19 storage and with big storage in hydro. But again, those are
20 expensive ways to go.

21 So, it is essentially a nonstorable good, and
22 that makes it susceptible to people have to pay whatever the
23 price is that's being quoted to them.

24 SENATOR BOWEN: Okay, thank you.

25 CHAIRMAN DUNN: Doctor, I want to stay on Page
26 Four for a moment. About middle through that paragraph it says,
27 "Both bidding strategies," there you go.

28 That sentence says:

10

1 "Both bidding strategies
2 will prevent some economic
3 generation capacity, which
4 has a marginal cost below
5 the market clearing price,
6 from being utilized to serve
7 the load."

8 In lay terms, can you explain that?

9 DR. SHEFFRIN: Simply, prices are set much higher
10 than what we think the cost of producing the electricity would
11 justify.

12 SENATOR ESCUTIA: Can I follow up on that?

13 CHAIRMAN DUNN: You certainly may, Senator
14 Escutia.

15 SENATOR ESCUTIA: In terms of the bidding
16 strategies, we're talking here about both physical withholding
17 as well as economic withholding?

18 DR. SHEFFRIN: Right, and remember, physical is
19 just, you're not bidding your total plant capacity.

20 Economic is, you're bidding it really high, and
21 knowing that it'll have to be taken because demand can't say no.

22 SENATOR ESCUTIA: In terms of those two bidding
23 strategies, which was the dominant bidding strategy used in the
24 market?

25 DR. SHEFFRIN: In the timeframe that we looked
26 at, which is May to November of 2000, we saw far more incidences
27 of the economic withholding, just bidding high for your
28 capacity.

10

1 SENATOR ESCUTIA: Do you have a percentage here,
2 an idea?

3 DR. SHEFFRIN: I think overall, we do in this
4 report. We do it month by month, but the overall was 80 percent
5 bidding high, and 20 percent actually not bidding their total
6 capacity in. So, 80-20.

7 SENATOR ESCUTIA: Now, just overall, when you put
8 both of those bidding strategies together, economic withholding
9 and physical withholding, just in the whole general category of
10 just withholding, period.

11 DR. SHEFFRIN: Right.

12 SENATOR ESCUTIA: How often does withholding
13 occur?

14 DR. SHEFFRIN: We found 98 percent of the hours.

15 SENATOR ESCUTIA: Ninety-eight percent of the
16 hours?

17 DR. SHEFFRIN: Hours, from May to, right,
18 November 2000. Ninety-eight percent of the hours, people were
19 bidding up the price way above their costs. Only two percent of
20 the hours did we find people were bidding close to their costs.

21 SENATOR ESCUTIA: Ninety-eight percent of the
22 hours.

23 DR. SHEFFRIN: Right.

24 SENATOR ESCUTIA: All right.

25 Thank you, Mr. Chairman.

26 CHAIRMAN DUNN: Absolutely.

27 I want to drag us into a somewhat new area,
28 although Professor Wolak referenced it last week very quickly.
10

1 The bottom of that page, what's in the box,
2 Donna. It starts, "For an oligopolist"

3 Can you explain to us, Dr. Sheffrin, a little bit
4 of economics background here and what oligopoly means, and
5 what's referenced in that box?

6 DR. SHEFFRIN: Sure.

7 SENATOR ESCUTIA: And can you compare that to a
8 monopoly?

9 DR. SHEFFRIN: Yes. A monopoly is a single
10 supplier in the market. And an oligopoly a few large suppliers
11 in the market.

12 But in electricity, you really have to look at
13 the number of suppliers relative to the amount of demand that
14 you had to meet. So, as Professor Wolak said, you could have a

15 hundred suppliers in the market, each only, you know, owning one
16 unit. But if total demand is a hundred, every one of them is
17 needed, and if any one of them withholds a little bit, then the
18 market is insufficient.

19 So, what we're saying here is, really, it's the
20 oligopolist is facing a residual demand curve, or how much of
21 the market he faces, he can influence the price on. That's the
22 definition we're using of oligopoly.

23 Whereas, the traditional definition is, an
24 industry dominated by a few sellers. But in this market, it's
25 unique because of the demand-supply relationship.

26 So, essentially, firms in an oligopoly really act
27 strategically in the sense that they're interdependent.

28 SENATOR BOWEN: Let me stop you here, because I'm
10

1 seeing Senator Escutia still looking puzzled. I want to sort of
2 make sure that we all understand the oligopoly concept.

3 I think what I heard you say is that an oligopoly
4 is -- that the only difference between a monopoly and an
5 oligopoly is how many owners there are.

6 DR. SHEFFRIN: Right.

7 SENATOR BOWEN: Other than that, if you own Park
8 Place and Boardwalk, you have a monopoly on the blues. But if
9 all of us enter into an agreement to own a one-fifth interest in
10 those, then we're an oligopoly.

11 SENATOR ESCUTIA: If I just may add just one more
12 thing then.

13 A monopoly then means that one single supplier
14 can supply the entire market?

15 DR. SHEFFRIN: Yes.

16 SENATOR ESCUTIA: That's a monopoly.

17 So, an oligopoly is, not one single supplier has

18 that ability?

19 DR. SHEFFRIN: Right, but what's the
20 characteristic of oligopoly is, their bidding behavior can
21 determine the market clearing price. Whereas, in a competitive
22 market, we're each so small, we have to take the price as being
23 determined; we can't influence by how we bid or by the amount
24 that we supply. We take it as a given.

25 In an oligopoly, they don't take it as a given.
26 How much they supply impacts the market clearing price.

27 CHAIRMAN DUNN: And basically, that's why you've
28 raised it in your report, is that we've got market participants
10

1 that can control the market by their bidding behavior.

2 DR. SHEFFRIN: Yes.

3 CHAIRMAN DUNN: Basically reduced to its core.

4 DR. SHEFFRIN: Right, right.

5 CHAIRMAN DUNN: Did you have any more follow-up,
6 Senator Bowen?

7 All right, I want to go to Page Five. I'm going
8 to ask from you, Doctor, a little bit of education here.

9 You have your study methodology. I want to take
10 us through the whole doggone thing here. But you basically
11 have, as I read the next two pages, going to Page Six, you would
12 have five different steps on the study methodology, starting
13 with, "Determine the Effective Bid Prices," then going down to
14 "Calculate Bid-Cost Mark-up," et cetera.

15 Can you just walk us through those five steps and
16 tell us what they mean?

17 DR. SHEFFRIN: Sure.

18 The first thing that we did is classify by
19 looking at the bidding patterns, classify each of the bidding
20 patterns by the either economic or physical withholding. And I

21 think that classification I have in Footnote Eleven, just so you
22 know.

23 We took a look at the bidding patterns. We tried
24 to determine whether it was economic withholding or physical
25 withholding, and classified them.

26 The next thing that we did is determine what we
27 call the effective bid price of each supplier. We took a look
28 at how they were bidding at the point of quantity they won in
10

1 the market. And in economics, that's a very important point,
2 because the amount that you win in the market, and the way you
3 bid at that point is essentially embodying your bidding
4 behavior.

5 CHAIRMAN DUNN: Let me stop you to make sure I
6 understand it.

7 The amount you want -- I'm not sure I'm
8 understanding what you're saying.

9 DR. SHEFFRIN: The amount you won in the market,
10 the price that you bid for that amount, is embodying your
11 bidding strategy.

12 So, we took a look at what we called the
13 effective bid price. If you were bidding close to your -- first
14 question, did you bid all of your available capacity in or not?
15 We looked at that, and we had -- and when I say bid all your
16 available capacity, either through a schedule in the bilateral.
17 You could have made an arrangement anywhere, we didn't care.
18 Or, a bid into the ISO reserve market or on the real-time
19 market. So, you made your full capacity available. We took a
20 look at that.

21 Secondly, we looked what price you were making
22 your capacity available. And if you made your full capacity
23 available, and the price you were making it available was lower

24 than the market clearing price, then we set your effective bid
25 price as the last bid you submitted for the full amount of
26 capacity.

27 If you didn't bid your full available capacity
28 in, only a portion of it, then, in fact, you're withholding 10

1 some, and your effective bid price was at or above the market
2 clearing price. And we gave you the benefit of the doubt, and
3 we said, okay, you had a bid in at the market clearing price.

4 And then, if you were bidding excessively above
5 your cost the whole way, and not the full amount got accepted,
6 then you actually had a bid in close to the market clearing
7 price. You had a bid above the market clearing price, and a bid
8 below, sandwiching it, then we said your effective bid price was
9 at the market clearing price.

10 So, we found this measure to, in essence,
11 summarize for us the bidding intentions of the suppliers, this
12 effective bid price. And we compared that to their cost, and
13 the difference between your effective bid price and your cost is
14 the mark-up, how much are you marking up your product to the
15 market.

16 CHAIRMAN DUNN: This is the step that's
17 identified at the bottom of Page Five.

18 DR. SHEFFRIN: Right, "Calculate Bid-Cost
19 Mark-up, right.

20 CHAIRMAN DUNN: Before you go on, with Professor
21 Wolak last week, we talked about there are some that raise a
22 question about examining the behavior when a company does not
23 bid in its full capacity, that that may be an area that we ought
24 to look at very closely.

25 Do you have any concerns about that? Have you
26 looked at whether there's some sort of pattern on the companies,

27 and how they do not bid in their full capacity?

28 DR. SHEFFRIN: Well, we have an estimate of what
10

1 we called physical withholding by hour by company.

2 CHAIRMAN DUNN: Right.

3 The question is, in relationship to each other,
4 did you examine that question at all?

5 DR. SHEFFRIN: No, that wasn't the primary focus
6 of the study.

7 CHAIRMAN DUNN: All right.

8 Let's go on to the methodology. I think you're
9 on Step Three.

10 DR. SHEFFRIN: Step Three was -- the other thing
11 that we were looking at in the bidding strategy is, because
12 demand and real-time is random, suppliers don't know exactly
13 what the exact demand will be, we took a look at what would have
14 been the price established if demand had been just a little bit
15 higher and a little bit lower. That also gave us an idea of
16 their bidding strategy in the neighborhood.

17 So, it gave us the ability to say, was their
18 intent to set the price even higher than what got established in
19 the market? Because they had a bid in there ready to be
20 accepted at that high a price if the market needed it. Or, if
21 it was a little bit lower, did they have a price pretty high to
22 keep the market price high so that it wouldn't fall?

23 And what we found is, yes, for all these
24 strategic suppliers, they bid in a way that maintained high
25 prices, would have been higher if demand randomly had been a
26 little bit higher, and remained high even if demand had fallen
27 some. That was Step Four.

28 CHAIRMAN DUNN: Let's go to, if I can, under that
10

1 one, Donna, the point is:

2 "The results show, by using
3 the typical bidding patterns
4 identified, suppliers were
5 not only able to effectively
6 raise the market clearing
7 price, but also to ensure it
8 remained high within a
9 reasonable range of variation
10 in demand. "

11 DR. SHEFFRIN: Right.

12 CHAIRMAN DUNN: Was that a surprise? I mean, my
13 kind of gut reaction to that was, that's disturbing.

14 DR. SHEFFRIN: Again, we didn't have any
15 predictions going into it. We wanted to just see what the
16 empirical evidence is.

17 Bids do not lie. You know, it's sort of like
18 forensic evidence. So, we just wanted to say what the bidding
19 behavior told us.

20 SENATOR BOWEN: May I ask a question?

21 CHAIRMAN DUNN: Please, Senator Bowen.

22 SENATOR BOWEN: Would you expect this result from
23 a workably competitive market?

24 DR. SHEFFRIN: From a competitive market, no.

25 SENATOR BOWEN: Would you expect that kind of
26 result from a workably competitive market?

27 DR. SHEFFRIN: No, not at all, because usually
28 what happens if you bid high, the discipline is, you're going to
10

1 lose market share, and so, it's not a profitable activity.

2 But in fact, if you can influence prices, and you
3 gain more by raising the price than you lose in not selling as

4 much, you do that calculus and you are a price making firm

5 SENATOR BOWEN: Let me go back to that again,
6 because I think that's a lot of the heart of this, is what kind
7 of risk do you take of not having your bid accepted if you bid
8 in higher prices?

9 I think what you just said is, the calculation
10 is, you make so much more on what you do sell by raising the
11 prices, that you don't care if you lose a little bit.

12 DR. SHEFFRIN: A Little bit, right.

13 SENATOR ESCUTIA: So, Senator Bowen, what you're
14 saying is that in a workably competitive market, in a regular
15 market, if you assume the risk of bidding high, you basically
16 assume the risk of bidding yourself out of the market.

17 SENATOR BOWEN: Exactly.

18 SENATOR ESCUTIA: And you're saying that in this
19 market, if we conclude that it is not workably competitive, if
20 you still bid high, you still get a share of the market at a
21 higher price.

22 DR. SHEFFRIN: Excellent economic students.

23 CHAIRMAN DUNN: You're not going to give us a
24 test; are you?

25 SENATOR ESCUTIA: I haven't been through this
26 since college, freshman year.

27 CHAIRMAN DUNN: Professor Wolak, Doctor, was
28 talking about, I think, a very similar situation, and correct me
11

1 if I'm mistaken here.

2 He referred to it as forbearance question, where
3 the market participants were forbearing from doing those lower
4 bids today for more profit tomorrow, when a company in a
5 competitive market would not do that for fear that that higher
6 profit tomorrow may not actually be there because of competition

7 on the market.

8 But that this market may actually have, where we
9 have all the participants forbearing, it seems to suggest, at
10 least, the arguments goes, that they all know the other is not
11 going to underbid them for the preservation of that higher
12 profit tomorrow.

13 Basically, isn't that the same thing that we've
14 just been talking about here?

15 DR. SHEFFRIN: Yeah, I think when, you know,
16 people think about bidding high, you wonder, well, the logic is,
17 why wouldn't just one supplier just bid a little bit lower and
18 sort of cheat the others out of, you know, a lot of money? And
19 the reason is, this market has played over as over again, and
20 quickly, the suppliers learn that their bidding behavior not
21 only effects their profits, but the profits of everybody else.

22 In essence, that's what an oligopoly, you know,
23 industry is, is all of the firms are interdependent in the sense
24 that consumers could easily switch, but there is a best strategy
25 that maximizes everybody's profits.

26 CHAIRMAN DUNN: That would be especially true
27 right now, where even that lower hypothetical bid you just
28 referenced is still much higher than the competitive benchmark

11

1 that we've talked about earlier today.

2 DR. SHEFFRIN: Right.

3 CHAIRMAN DUNN: In other words, even with that
4 lower bid, they're still going to make a heck of a profit.

5 DR. SHEFFRIN: And it's not that much lower. It's
6 not that much lower that you would normally expect in a
7 competitive market. They're all high.

8 CHAIRMAN DUNN: Senator Bowen.

9 SENATOR BOWEN: I think it's useful. I've been

10 trying to find ways to sort of figure this out for people who
11 are not used to buying and selling electricity as a commodity.

12 For me, one of the most useful comparisons has
13 been to think about the way the stock market works, and the
14 difference between the normal market hours, where there's
15 regular trading. And if you bid too low, or ask to sell too
16 high, you simply don't complete a transaction.

17 And the much different result that happen in the
18 after-hours market, where, because it's so thinly traded, you
19 can get odd results, sales that are very high or very low, and
20 very different result in that after-hours or premarket trading
21 than you get during the normal market.

22 And it's evident that the discipline of the
23 market during the normal hours, and the volume, and the number
24 of buyers and sellers, precludes parties from being able to do
25 that.

26 And I think it also is useful because it shows
27 how, when one set of bidders starts to behave in a certain way,
28 others very quickly figure it out, and you see much bigger

11

1 swings than you would if there were a more normal.

2 I guess the question is, in this kind of a market
3 for electricity, where you have a commodity that's difficult to
4 store, where you have some demand response possible, but where
5 the economic damage from not consuming just makes it infeasible
6 for a large number of purchasers, is it possible to have a
7 market that actually does function? We are new in this
8 experiment of trading electricity in a market.

9 Do you think it's possible to have this kind of a
10 market, given the fact that suppliers, both load and purchasers,
11 are going to figure out what those patterns are?

12 DR. SHEFFRIN: In my opinion, it is possible, but

13 it's dependent on a couple of key fundamentals being there. And
14 if you don't have them there, then you're not going to get the
15 result, the competitive outcome you'd like.

16 The first two years of this market gave us fairly
17 competitive outcomes. And the reason was, we had sufficient
18 reserves that not only helped from a reliability point of view,
19 but helped give that needed competition and discipline in this
20 market.

21 But when reserves -- the study that I've done
22 shows that when reserves drop below 20 percent, then you begin
23 to see the mark-up from the suppliers and not competitive
24 outcomes.

25 SENATOR BOWEN: Twenty percent?

26 DR. SHEFFRIN: Twenty percent reserves.

27 SENATOR BOWEN: That suggests to me that we
28 should not expect any kind of significant relief from the FERC
11

1 order of yesterday that doesn't kick in until reserves go below
2 seven-and-a-half percent.

3 DR. SHEFFRIN: I haven't read the order fully,
4 but my studies suggest that for zero mark-up, truly competitive
5 outcomes, you need 20 percent reserves, and then the mark-up
6 rises as that reserve gets smaller.

7 SENATOR BOWEN: Thank you.

8 CHAIRMAN DUNN: Senator Morrow.

9 SENATOR MORROW: Dr. Sheffrin, Senator Bowen, I
10 think, touched on this. Let me see if I can't just nail it down
11 exactly where you're coming from here.

12 The bidding behavior that you observed, which
13 would reflect an exercise of market power and increased prices
14 and the like, could that have been accomplished without
15 communication among the sellers?

16 DR. SHEFFRIN: It could be accomplished without
17 communication, because in essence, this is a repeated market.
18 People see the impact of their bidding behavior on the outcome,
19 hour after hour. So, it's very easy to learn without explicit
20 communication.

21 I'm not saying there was or wasn't, but
22 certainly, you know, a model of oligopoly pricing says that you
23 don't have to communicate to get these results. Whether people
24 did or not, I don't know.

25 SENATOR MORROW: Are you aware if there was any
26 direct communication or any evidence of direct communication
27 among the participants?

28 DR. SHEFFRIN: I haven't looked into that

11

1 question at all, so I could not comment on that.

2 SENATOR MORROW: Thank you.

3 CHAIRMAN DUNN: I want to just follow-up on one
4 thing that Senator Bowen said, Doctor. That was, that this is
5 new market here, and perhaps it couldn't work.

6 But if I'm hearing you correctly, what we really
7 have is what Dr. Hildebrandt talked about, and what you've now
8 talked about is, that in fact it is the existence or exercise of
9 market power that really has brought us here with respect to the
10 prices. So that the market as set up, if we eliminate market
11 power, should work as those assumed that it would work when it
12 was originally set up.

13 Is that a fair statement?

14 DR. SHEFFRIN: Yes, but you have to have the
15 ingredients for competitive outcomes. One of those ingredients
16 is not a lot of transactions on the spot market. I think
17 everyone has agreed to that.

18 Then, you know, another ingredient is having much

19 more price responsive demand, ability of all parties to hedge.
20 But you can't have that in this current
21 environment because prices have been bid so high, no one is
22 going to voluntarily enter into a contract at anything less than
23 what they've already been able to collect.
24 So, you almost need an administrative solution to
25 get volumes out of the spot market in order to then proceed and
26 have outcomes that you could trust, or that are competitive.
27 Outside of that, you know, you need some other very -- fairly
28 heavy-handed mitigation.

11

1 CHAIRMAN DUNN: Make sure I understand that.
2 Because of the percentage that's in that given
3 market, the potential for exercising market power increases.
4 If we reduce the percentage that is in that given
5 market, we reduce the opportunity for market power to be
6 exercised.
7 But market power, as Dr. Hildebrandt testified,
8 is exercised virtually across the board, at least in his
9 opinion. So, one of the critical components -- I may be taking
10 you farther than you are, Doctor, and my apologies if I am --
11 one of the first steps would be, if we accept the argument that
12 there is the existence of the exercise of market power is, we
13 have to strike at its heart and prevent that market power from
14 being exercised before we're going to see the fruits of a true
15 competitive market.

16 DR. SHEFFRIN: Yes.

17 CHAIRMAN DUNN: I want to go to Number Four,
18 which is "Excessive Profit Resulting from Market Power," as
19 we're walking through your methodology.

20 DR. SHEFFRIN: Here what we did in this study is
21 try to break out -- first of all, excess profits are just those

22 revenues above what a firm would earn under competitive market
23 conditions. And we tried to then break out those excess profits
24 between two components, what we call monopoly rents, which is as
25 a result of your setting the price high, successfully setting
26 the market clearing price high, you know, what revenues flow to
27 you. That's monopoly rents.

28 Versus, you didn't actively bid to set the price
11

1 high. You bid pretty close to your cost, but somebody else set
2 it high, in which case you just caught a windfall.

3 So, we just tried to take the excess profits
4 above competitive levels that Dr. Hildebrandt was talking about,
5 and break it into two components in this study.

6 CHAIRMAN DUNN: Okay. And the fifth step,
7 "Economic Models of Bidding Behavior."

8 DR. SHEFFRIN: The fifth step was to take a look
9 at, was this just a hit-and-miss activity? Or was this
10 consistent with some pricing behavior that economic theory tells
11 you about?

12 We found it close to an oligopoly pricing bidding
13 behavior.

14 CHAIRMAN DUNN: In other words, it wasn't
15 hit-and-miss?

16 DR. SHEFFRIN: It wasn't hit-and-miss. People
17 were acting in a way to maximize profits. They absolutely
18 should act that way, but they weren't price takers by their
19 action. They could actually influence and set the level of the
20 market clearing price.

21 CHAIRMAN DUNN: Is that where we cross a line, as
22 you just stated? They were maximizing their profits, and I
23 believe your statement was, it's what they should be doing, but
24 the point where, in your opinion, the line is crossed as far as

25 competitive versus noncompetitive, is when that behavior
26 interferes with the operation of a competitive market?

27 DR. SHEFFRIN: And they actually succeed, you
28 know. The discipline is, they can try to do that, but they 11

1 won't be successful because other suppliers will discipline
2 them.

3 CHAIRMAN DUNN: That's the free market.

4 DR. SHEFFRIN: Right, that's a free market, but
5 when no one is acting that way, and everyone knows that it's to
6 their benefit if high prices are set, then that's not a
7 competitive market outcome.

8 CHAIRMAN DUNN: And that's what you found?

9 DR. SHEFFRIN: Right.

10 CHAIRMAN DUNN: I want to go to, it starts at the
11 bottom of Seven, "Results", but I really want to just zero in on
12 Page Eight. I want to go right to Footnote Eleven, if we can
13 bring that up. Donna, it spills over, the footnote, onto Page
14 Nine.

15 Doctor, you see where I am?

16 DR. SHEFFRIN: Yes.

17 CHAIRMAN DUNN: While Donna is putting that up,
18 it talks about "Five Typical Bidding Patterns" are classified in
19 our study, and then it lists them.

20 Can you quickly walk through them for us?

21 DR. SHEFFRIN: This is really getting esoteric,
22 but essentially --

23 CHAIRMAN DUNN: And we don't want to do that too
24 much.

25 DR. SHEFFRIN: Right.

26 Again, I was trying to look at all of those
27 hourly bidding patterns that we were seeing from all the

28 suppliers and classify them in categories. And the first 11

1 category is, no withholding. You bid everything that you had
2 in, and you didn't bid it very much higher than your cost. You
3 were acting as a price taker. That was Pattern 0.

4 Then there was another pattern which you bid in
5 everything, but you bid it in at very high prices, significantly
6 above your cost. That was Pattern 1.

7 So, the third pattern was, you didn't bid in your
8 full available capacity, so you were physically withholding some
9 capacity from the market. But what you did bid in was not
10 significantly above your cost. So, that was Pattern 2. That's
11 a pure form of physical withholding. And although there isn't a
12 significant bid mark-up, you aren't supplying your full amount,
13 so the market has to go to the next available supply, which is
14 usually at a higher cost. So, you still, through that, clearly
15 influence the market clearing price, even though you, yourself,
16 weren't bidding high.

17 And then we have Pattern 3, which is physical
18 withholding in combination with significant mark-up. You didn't
19 bid your full capacity in, and what you did bid in wasn't close
20 to your cost, but at a very high mark-up.

21 CHAIRMAN DUNN: Just for a point of
22 clarification.

23 You refer to that Pattern 3, even though it's
24 number four under your "Five Typical Bidding Patterns."

25 DR. SHEFFRIN: Sorry about that.

26 CHAIRMAN DUNN: That's okay.

27 DR. SHEFFRIN: Then the last one, which we call
28 economic withholding, Pattern 4, is that essentially you bid

11

1 high for all your capacity. As a result of your bidding high,

2 not the full amount of your capacity was used in the market.

3 CHAIRMAN DUNN: Is it fair to conclude that only
4 Pattern 0 or Number One that you have in Footnote 11, only
5 Pattern 0 is consistent with competitive bidding?

6 DR. SHEFFRIN: Yes.

7 CHAIRMAN DUNN: The other four display some form
8 of withholding, either physical or economic withholding, or a
9 combination of both?

10 DR. SHEFFRIN: Yes, and this is after looking at
11 thousands and thousands of bidding patterns.

12 CHAIRMAN DUNN: But you found all five bidding
13 patterns in the data you examined?

14 DR. SHEFFRIN: Right.

15 CHAIRMAN DUNN: I want to take you now out of the
16 footnote, Donna, if we can, and into the middle paragraph in
17 that page. The paragraph itself starts, "Withholding patterns
18 and bid-cost," but I want to just go one sentence in there.
19 It's in the middle and starts:

20 "The observed bidding
21 patterns show that suppliers
22 bid in expectation of
23 increasing the market
24 clearing price because they
25 were setting a high market
26 clearing price directly or
27 indirectly in most hours. As
28 a result of their exercise of

12

1 market power, many suppliers
2 earned extraordinary amounts
3 of excess profit at huge cost
4 to the consumers."

5 That's basically the conclusion that you've
6 reached in examining those five bidding patterns.

7 DR. SHEFFRIN: Yes.

8 CHAIRMAN DUNN: All right.

9 Then we go on to some of the key findings are,
10 and I know that we've talked about them. We've already talked
11 about 25,000 hours at that first bullet point, Donna, underneath
12 that one.

13 Anything additional that you want to add with
14 respect to that first key finding that you listed?

15 DR. SHEFFRIN: I think we've talked about
16 it.

17 CHAIRMAN DUNN: I know we talked about the 98
18 percent, and so forth.

19 DR. SHEFFRIN: Right.

20 CHAIRMAN DUNN: You mention in the next bullet
21 point:

22 "Economic withholding
23 was the dominant bidding
24 strategy utilized to
25 inflate the prices."

26 Next one; right?

27 DR. SHEFFRIN: Yes.

28 CHAIRMAN DUNN: I believe we've already talked
12

1 about that one as well.

2 DR. SHEFFRIN: Right.

3 CHAIRMAN DUNN: I want to go to the next bulleted
4 paragraph, but I want to go to the middle of it, with the
5 sentence that begins:

6 "The low frequency of
7 observable physical

8 withholding highlights the
9 importance of monitoring
10 economic withholding ...
11 and explains why the review
12 of physical outages alone is
13 insufficient to uncover
14 supplier behavior producing
15 high market prices."

16 Can you explain that in a little more detail, lay
17 term-wise, for us?

18 DR. SHEFFRIN: Both physical and economic
19 withholding have the same outcome. There's withholding from the
20 market of economic generation units that should have been
21 utilized to meet demand.

22 All I was trying to do by differentiating between
23 economic and physical is, sometimes you'll go out to a plant to
24 see if it's up and running, and all of those things. And first,
25 it's a very difficult task, after the fact, to see if a plant
26 should have been running. In my mind, it's almost next to
27 impossible. There will be a thousand reasons given why a plant
28 isn't up, and you can't distinguish between, you know, those

12

1 that are legitimate and those which are not legitimate.

2 CHAIRMAN DUNN: This is what Dr. Wolak called the
3 sick days, very difficult to determine whether, in fact, the
4 employee was sick on a given day.

5 DR. SHEFFRIN: Right, but, so physical
6 withholding itself is very difficult to discover after the
7 fact.

8 Economic withholding is easy to see just by the
9 bids which are submitted in the market. That's sort of the
10 unique part of this electric industry is, you can observe

11 bidding patterns. We have them. And you know the suppliers'
12 cost, and you can compare the two.

13 So, I think that viewing economic withholding has
14 to be just as important in monitoring as anything you're going
15 to do, you know, at a plant site. And certainly, it may be more
16 fruitful, if that's the strategy people are using to inflate
17 prices in the market.

18 CHAIRMAN DUNN: Next paragraph, and just one
19 sentence: "All five of the suppliers," whom we haven't
20 identified, at least not yet:

21 "All five of the suppliers
22 marked up their bids
23 significantly above cost and
24 did so in every month from
25 May to November."

26 No exceptions?

27 DR. SHEFFRIN: No.

28 CHAIRMAN DUNN: The next paragraph. I just want
12

1 to touch upon the first two sentences. It says:

2 "Many suppliers used well
3 planned strategies to ensure
4 maximum possible prices at
5 all load conditions. A 50
6 megawatt increase in the
7 amount demanded from a
8 supplier's portfolio would
9 have increased the market
10 clearing price substantially."

11 Explain that.

12 DR. SHEFFRIN: That was one of the steps in the
13 study that I reviewed in looking at the bidding patterns. You

14 take a look at, because suppliers don't know exactly what the
15 demand will be, and how much of their output will be accepted,
16 how do they bid in a way to ensure high prices?

17 The way they did it was, beyond the market
18 clearing price, they had bids in at even higher prices. And
19 then, below the market clearing price, they had bids fairly high
20 to ensure that it was maintained high.

21 CHAIRMAN DUNN: Okay.

22 Then I want to go over to Page Ten, the very last
23 paragraph. It says, "Looking beyond."

24 Doctor, I want to zero in here, because I know
25 we've touched a little bit on this, but it says:

26 "Looking beyond ISO real-time
27 market, the exercise of
28 market power had a

12

1 significant impact on the PX
2 market. Price shocks in the
3 ISO market quickly spread to
4 the PX the next day due to
5 the expectation of high ISO
6 prices. It is also
7 conceivable that the
8 suppliers used withholding as
9 an integral part of their
10 overall strategy to influence
11 market prices in both ISO
12 and PX markets."

13 In lay terms, can you explain that?

14 DR. SHEFFRIN: As I said in the beginning, the
15 ISO market clearing price can really be sort of a bell weather,
16 and begin to set expectations, as Dr. Hildebrandt said about

17 transactions that occur both in the PX day-ahead market, as well
18 as bilateral markets.

19 So, what we found, especially in looking at the
20 impacts of the price cap and prices throughout the west is, we
21 found prices in the real-time market following -- being followed
22 by prices set in other markets as well. So, to the extent that
23 we saw market power here, we certainly believe that there was as
24 much market power exercised in these other markets.

25 CHAIRMAN DUNN: But as of yet, there's been no
26 definitive studies such as this one on the those other markets?

27 DR. SHEFFRIN: There hasn't. I believe
28 Dr. Hildebrandt has begun to look at PX market transactions,
12

1 he's just received that, and starting that process.

2 CHAIRMAN DUNN: But based upon what you just
3 said, you don't really have any expect actions of finding any
4 substantially different conclusions in those other markets?

5 DR. SHEFFRIN: No.

6 CHAIRMAN DUNN: All right.

7 Just a point of clarification, Page 11, the
8 bullet point that's contained on that one near the top, very
9 first sentence says:

10 "In exploring the issue of
11 whether an oligopoly pricing
12 model helps to explain the
13 observed bidding pattern in
14 California power market, DMA
15 found evidence that the
16 dominant bidding pattern is
17 consistent with two
18 characteristics of a supply
19 function equilibrium model of

20 oligopolist pricing. "

21 I think I got through that okay.

22 DR. SHEFFRIN: Yes.

23 CHAIRMAN DUNN: Lay terms?

24 DR. SHEFFRIN: Simply what we talked about
25 before. This wasn't just hit-and-miss. This could be expected
26 from the type of market structure that you have, and that market
27 structure in economics is known as an oligopolist.

28 SENATOR BOWEN: Why does she look at me when she
12

1 talks about these things?

2 DR. SHEFFRIN: She seems to like you.

3 SENATOR BOWEN: To me, it all reminds me of being
4 in fourth grade, and taking my Monopoly game and printing more
5 money and inventing rules to lend money to your fellow players
6 at usurious rates when they were about to go bankrupt.

7 CHAIRMAN DUNN: The last area of the report that
8 I want to touch upon, Doctor, it's the policy implications.
9 Donna, if you can bring up that whole paragraph, same page.

10 It says, "In terms of policy implications, this
11 study helps to fill a gap left by...." I'm not going to read
12 the whole thing:

13 "However, previous studies
14 failed to identify an
15 individual exercise of market
16 power and could not establish
17 a link between individual
18 strategic bidding actions and
19 their impact on market
20 clearing prices. This study
21 provides evidence that many
22 large suppliers actively

23 engaged in strategic bidding
24 efforts and that their
25 activity had a direct impact
26 on market prices. Moreover,
27 their bidding strategy was
28 not ad hoc, but consistent

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1 with a certain model of
2 oligopoly pricing behavior.
3 This implies the systematic
4 exercise of market power to
5 maximize profit. "

6 It was a few weeks since this was published. Do
7 you have any doubt about that? Anything come your attention
8 that questions your conclusion I just read?

9 DR. SHEFFRIN: Not the methodology, but again, we
10 always stand ready for suppliers to supply us their actual data.
11 And we would love to plug that in, versus our estimates.

12 CHAIRMAN DUNN: Have any offered to provide you
13 that data?

14 DR. SHEFFRIN: We have had LADWP come and make
15 that offer, as well as BPA.

16 CHAIRMAN DUNN: Anybody else other than those two?

17 DR. SHEFFRIN: No.

18 CHAIRMAN DUNN: But the offer still stands?

19 DR. SHEFFRIN: The offer stands to every supplier
20 in our market.

21 CHAIRMAN DUNN: And what you're referring to
22 their very specific data that they have possession of that
23 you've had to make certain assumptions about in doing these
24 studies?

25 DR. SHEFFRIN: Right.

26 CHAIRMAN DUNN: Voluminous data, is that what
27 we're referring to?

28 DR. SHEFFRIN: It doesn't have to be voluminous,
12

1 but it should show their actual acquisition costs of these
2 various inputs to supply power.

3 CHAIRMAN DUNN: We've talked about your
4 invitation to the market participants to provide their specific
5 data.

6 After this report was published, did you get any
7 response from any of the market participants, either disagreeing
8 with or arguing with the conclusions that you reached?

9 DR. SHEFFRIN: Not directly. We've had a number
10 of market participants ask for their bid data: What bid data of
11 mine did you examine? Could you supply me with a copy of that?
12 And we have made that available as requested.

13 CHAIRMAN DUNN: This document was submitted to
14 FERC?

15 DR. SHEFFRIN: Yes.

16 CHAIRMAN DUNN: Have you received any feedback
17 from FERC staff at all regarding this report?

18 DR. SHEFFRIN: Just Commissioner Massey, in his
19 dissenting opinion to yesterday's -- said it was a compelling
20 report.

21 CHAIRMAN DUNN: Okay, and in preparing this
22 report, other than the data specifically from the market
23 participants, is there any other data that you would have wanted
24 to have access to that you either couldn't or didn't gain access
25 to?

26 DR. SHEFFRIN: You know, of course. As someone
27 who does studies, I would always want more and more.

28 CHAIRMAN DUNN: There's never enough.

1 DR. SHEFFRIN: There's never enough, but I feel
2 confident that the data and the assumptions we made, you know,
3 are defensible and support the conclusions. Any others would be
4 refinements on our -- but would not change the study methodology
5 at all.

6 CHAIRMAN DUNN: Are there any refinements under
7 way, any additional studies under way, or any additional studies
8 that are planned for?

9 DR. SHEFFRIN: Again, I think you named a number
10 of possible extensions of this, extending the time period,
11 things like that, that obviously we'd like to do.

12 And to the extent that the market clearing
13 price, the uniform market clearing price mechanism is in effect
14 this summer, we want to use these methods to continue to monitor
15 bidding behavior.

16 CHAIRMAN DUNN: Questions, Senator Bowen.

17 SENATOR BOWEN: We had some discussion with Dr.
18 Hildebrandt about the impact of pricing in the FERC
19 jurisdictional generators on prices commanded by -- and I use
20 the word "commanded" deliberately -- by public power
21 authorities.

22 I'd like you to sort of give us your view of how
23 you view the relationship between what's happening with
24 strategic bidding among generators, and the results that that
25 has on two things. One, you may not be able to answer at all,
26 but one is the public power authorities: the munis, the BPAs,
27 and the Power Xs of the world.

28 And the other is the extent to which that bidding
13

1 behavior and the resulting prices have an impact on the spot
2 market for natural gas.

3 I asked that question because many of the QF
4 contracts are pegged to the spot market price of natural gas.
5 And if the bidding behavior of electricity generators has the
6 impact of driving up the spot market price of natural gas, then
7 Californians are paying too much, not for one-third of their
8 power, but for two-thirds of their power.

9 DR. SHEFFRIN: I would agree with all those
10 statements that you made. That the price of natural gas is such
11 a key input into electricity, and because it is, the resource
12 fueling the price at the margin, it affects everybody. You
13 know, minus, cost of acquisition, of gas, all of those.

14 SENATOR BOWEN: Does bidding up the price of
15 thermal units also drive up with spot market price of natural
16 gas? In other words, would you expect a relationship between
17 higher natural gas prices and higher electricity prices?

18 DR. SHEFFRIN: Absolutely. I think Professor
19 Wolak testified that there's what is known in the industry as a
20 spark spread. And to the extent that you can -- you have both a
21 gas portfolio and electricity portfolio, you can decide whether
22 to convert that gas into electricity and earn your profit, or
23 keep it as gas and earn your profit.

24 SENATOR BOWEN: Then in California, because of
25 the QF Section 390 of our code and the PURPA, that has the
26 impact of driving up QF prices as well?

27 DR. SHEFFRIN: Electricity and gas are
28 fundamental inputs to lots of this economy and has an impact

13

1 everywhere.

2 SENATOR BOWEN: And if we had a market for FERC
3 jurisdictional generation that did not result in market power
4 and the kind of prices we've seen, what would you expect to see
5 in prices from Power X, BPA, LADWP, Tucson Power and Light,

6 Portland General, and other munis and public utilities? What
7 impact on prices from those generators would you expect?

8 DR. SHEFFRIN: Well, first I did want to correct.
9 Power X is considered FERC jurisdictional. They did file for
10 market-based rate authority.

11 SENATOR BOWEN: Isn't Power X the marketing arm
12 of BC Hydro?

13 DR. SHEFFRIN: They are, but they applied and
14 made a filing to sell at market-based rates. So, my belief is,
15 they're considered FERC jurisdictional.

16 SENATOR BOWEN: Even though they're Canadian.

17 DR. SHEFFRIN: Correct.

18 SENATOR BOWEN: I guess that's a function of
19 NAFTA?

20 DR. SHEFFRIN: I don't know.

21 SENATOR BOWEN: Speculation, not relevant, but
22 interesting.

23 DR. SHEFFRIN: Again, I couldn't say definitively
24 how it would impact, but certainly in an oligopoly market,
25 everyone benefits from high prices. And to the extent that
26 they're lower, then people aren't going to try to price
27 themselves out of the market.

28 So, I believe -- and we saw that with the price
13

1 cap being lowered successively this past summer, from 750 to 500
2 to 250, you know. The bidding just seemed to coalesce at those
3 levels, and no one wanted to bid above for fear of being priced
4 out.

5 SENATOR BOWEN: Has the ISO looked directly at
6 the impact of the price caps and the subsequent FERC mitigation
7 on natural gas prices?

8 DR. SHEFFRIN: We haven't done that study. The

9 only thing that I track is, I see the Henry Hub price of natural
10 gas, and that is sort of the national price of natural gas.
11 Then I see the California border price.

12 And for the first couple of years of the market,
13 they tracked within a couple of pennies of each other. And
14 then, starting in November, this big divergence of prices. And
15 again, that got reflected in the electricity prices very, very
16 quickly.

17 SENATOR BOWEN: Is that a chicken and an egg
18 situation? Do you know whether the natural gas spot market
19 drove the electricity prices, or electricity prices drove the
20 natural gas spot market?

21 DR. SHEFFRIN: Certainly being able to sell
22 electricity, you know, at such high premiums allowed you to mark
23 up your natural gas.

24 My understanding is, natural gas has had its own
25 problems with deregulation of resale bundled. So, you know,
26 people got the natural gas capacity, and then, they resold it to
27 an affiliate, who then bundled it with energy, and there was no
28 control.

13

1 I'm sorry, bundled it as a retail product, and
2 then there was no control at that end. And so, you know, you
3 got your stuff, And you get to price it up, whatever the market
4 will bear.

5 SENATOR BOWEN: The other thing that I'd like to
6 explore just briefly, because we haven't really talked about it
7 today, is market-based rate authority, and the impact of
8 transmission restrictions on the potential for exercise of
9 market power.

10 Could you talk a little bit about how the
11 electron highway affects the ability of particular generators to

12 exercise market power?

13 DR. SHEFFRIN: Yes. To the extent that there are
14 transmission bottlenecks, that means that the only supply
15 available in a particular area are from then very few
16 generators. And the way generation was divested, it was in
17 large chunks in specific areas.

18 So, you then end up, because there's no potential
19 competitors competing with you, being able to charge whatever
20 the market will bear.

21 So, you know, another big component of
22 competitive markets has to be an upgrade, a significant
23 investment in our transmission grid.

24 SENATOR BOWEN: We talked last March, a year ago
25 March, about the problem of phantom congestion in the
26 transmission system. Contractual obligations for transmission
27 that, while there was not an actual physical shortfall of
28 transmission capacity, it might not be available to the ISO for
13

1 transmitting electricity. So that, even if you had physical
2 capacity, and you had commodity that could be moved, you still
3 might not be able to get the electricity to where it was
4 needed.

5 Is that still is a problem, or have we resolved
6 that issue?

7 DR. SHEFFRIN: No, I still believe that that is a
8 problem, contractual constraints allowing that not to be
9 utilized. I think we were trying to work to certain rules
10 where, you know, maybe before, the day-ahead, all those
11 contractual rights were honored. But after the day-ahead, in
12 essence, you use it or lose it type thing, so it's fully
13 available to everyone.

14 I believe it's still being worked out.

15 SENATOR BOWEN: I know that's not your specific
16 area.

17 DR. SHEFFRIN: No, it isn't.

18 SENATOR BOWEN: But I would like to sort of flag
19 that for something that we ought to revisit from hearings a year
20 ago, because it could be important this summer.

21 We certainly don't want to leave physical
22 capacity unused.

23 Gas pipelines, I think, have some of the same
24 issue, where, if someone has the transportation rights, there
25 may be physical capacity, but it's not usable.

26 The difference is, we probably can deal with the
27 transmission issues. I'm not sure, because of FERC
28 jurisdiction, that we can deal with the pipeline issues.

13

1 Thank you.

2 CHAIRMAN DUNN: Senator Morrow, any questions?

3 Just a couple follow-up, Doctor.

4 I realize that in your position with the Market
5 Analysis Committee, that it's not the focus to look for legal
6 versus illegal behavior. You're looking to monitor a market to
7 ensure that it remains a competitive market, and that's your
8 primary focus. And that market power is certainly of
9 significant concern, not only for its anti-competitive impact,
10 but also how it impacts a participant's access to market-based
11 regulations via FERC.

12 Obviously, our focus is in part that, but also
13 goes beyond that. And from your perspective, and in your
14 background, and so forth, one of the things we want to look at
15 is whether there's in fact evidence of collusive behavior.
16 Where and how do we look for that? Are there methods or
17 modeling that allows someone to begin to examine a given market

18 no determine if certain behavioral patterns indicate
19 collusiveness or coordinated behavior on that market?

20 DR. SHEFFRIN: I'm sure there are methods, but
21 I'm not the expert on those, so I wouldn't be able to speak to
22 that topic.

23 CHAIRMAN DUNN: Do you have any idea -- I'm not
24 looking for names of experts -- what type of expert would know
25 how to examine a market to determine whether the activity on
26 that market has indices of coordinated behavior?

27 DR. SHEFFRIN: You know, again, I would think
28 either Professor Wolak or Severin Borenstein, or, you know, some
13

1 of those academic people would be on the forefront of looking at
2 methods to examine those type of behaviors.

3 CHAIRMAN DUNN: Great.

4 I don't have any further questions.

5 Go ahead, Senator Bowen.

6 SENATOR BOWEN: Just a few, and just briefly,
7 because I think in the U&C Committee, we'll probably deal with
8 this.

9 I understand that the ISO is considering a market
10 reform proposal, or has proposed one.

11 Have you worked on that at all?

12 DR. SHEFFRIN: It's other people; it's not me.

13 SENATOR BOWEN: All right, then I won't ask you.

14 CHAIRMAN DUNN: Seeing no further questions,
15 Doctor, I think we've come to the end. I suspect in the coming
16 hearings, there might be a time we may want to call you back. I
17 hope you'll be willing to do that. We'll try to minimize the
18 time clearly.

19 We thank you very much for your patience this
20 afternoon and sharing with us your report and your conclusions,

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21 Doctor. Thank you very much.

22 DR. SHEFFRIN: Thank you, Senator.

23 CHAIRMAN DUNN: That's it for today. We'll get
24 the announcement out to everyone as far as the next hearing as
25 soon as possible. The next one will be here in Sacramento, but
26 it's the one after that that may end up in Southern California.
27 But again, we need to work with the schedules of all the
28 committee members and we'll let everyone know.

13

1 Thanks, everyone. We're adjourned.

2 [Thereupon this portion of the
3 Senate Select Committee hearing
4 was terminated at approximately.

5 5:13 P. M.]

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2

3 I, EVELYN J. MIZAK, a Shorthand Reporter of the State
4 of California, do hereby certify:

5 That I am a disinterested person herein; that the
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9 I further certify that I am not of counsel or
10 attorney for any of the parties to said hearing, nor in any way
11 interested in the outcome of said hearing.

12 IN WITNESS WHEREOF, I have hereunto set my hand this
13 _____ day of _____, 2001.

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